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NEWSPAPER

Share Opens Doors on Measurement Papers

By Don Leavitt
Of the CW Staff

NEW YORK – Breaking with its tradition of keeping things to itself, the IBM users' group Share has published two volumes of papers previously collected by its computer measurement and evaluation (CME) project.

The material now being released was published internally between 1967 and 1973, a Share spokeswoman explained. They are being made available to anyone in or out of Share for $25 apiece or $40/pair "to fill the information gap which exists in this important area," she added.

Previously, the only "public" publication Share had a hand in was the joint Share/Guide data base management systems requirements manual released in November 1970. Various other "white papers" have appeared from time to time, but they have been intended primarily for internal distribution.

The CME project, now managed by Dennis R. Chastain of the General Accounting Office, is one of 50 research, development, language and publications projects currently underway within the user group, noted Share president Shirley F. Prutch of Martin Marietta Data Systems.

She foresees the possibility of similar releases of data collected by other projects, but was unwilling to discuss what projects might be involved or when future publications might be announced.

One large problem Share had to overcome before the CME papers could be released, Prutch said, was getting permission to publish from the companies represented by the authors of the papers. This same problem will crop up with any new publications, she added.

The new books, totaling some 1,300 pages, cover a range of specific topics including System Measurement Facility (SMF) and other accounting systems, as well as charging mechanisms and software and hardware monitors.

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...ooks at Elections

Plan to Register Voters Shelved

By Patrick Ward
Of the CW Staff

MARICOPA COUNTY, Ariz. – The first county in the nation to attempt an on-line voter registration program has temporarily shelved the project, which was running too late for its intended use in this fall's general election.

The Maricopa County (Phoenix metropolitan area) system would be a completely computerized voter registration method replacing manual records, according to Mike Griffin, who has been director of the county's Information Systems and Services Department since last December.

Although the system would run in batch mode most of the year, it could be put on-line prior to elections for faster data entry and inquiries.

One of the system's features is a program that automatically generates the precinct and polling place for any new voter when given his address. On-line capabilities such as this make the system unique in the country, Griffin said.

Project Status in Conflict

The county's shelving of the project may be permanent, according to B.C. Lumbert, a local computer consultant and frequent critic of Arizona state DP operations.

Lumbert, who is running for state mine inspector on the Republican ticket, charges that the county has trouble just keeping its payroll runs accurate and should not have taken on such a pioneering project.

Lumbert filed suit against the county early this year for the right to examine the programs furnished by the C. Howard Wilson Co., the contractor for the on-line system. But Lumbert dropped the suit because of its expense, he said.

Griffin agreed that "Maricopa County

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Similar House Action Expected

Senate Group to Approve Privacy Bill

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – A Senate committee will report out a bill dealing with privacy and data banks this week and most analysts here believe the major provisions of the act will be law before the new year.

The bill (S-3418) will be reported to the Senate by the Senate Government Operations Committee and a House committee is expected to approve a similar measure on Sept. 12.

While the bills differ in some respects, they contain similar provisions for the most part and sources both in the legislative and executive branches predicted last week that a compromise bill containing the areas of agreement will be passed by Congress this year and signed by President Gerald R. Ford.

Both bills apply to computerized data banks operated by the Federal Government and to data banks created by government contracts or grants whether in the public or private sector.

Limit Collection

Basically, the measure that will be approved by the Government Operations Committee this week calls on government agencies to limit their collection of data and provides for individual access to any data collected or maintained in such systems.

It also provides for public notification and possible hearings on any proposed data banks in the federal sphere or any linkage of existing data banks operated by the government.

Specifically, the bill contains the following provisions in Title II:

- Agencies should insure the accuracy, completeness, timeliness and relevancy of any personal data collected.
- Agencies must keep an accurate account of access to the data by persons within the agency and should keep a log of any disclosures to persons outside the agency.
- Disclosure of any personal information should only be on a strict "need-to-know" basis.
- Agencies should establish rules of conduct for the operation of such systems in compliance with the law.
- Agencies should take appropriate administrative and physical safeguards to insure the security and integrity of the data within the system.
- Agencies must disclose information in the systems to the subjects of that information, but would not have to notify individuals that it was keeping such information.
- Agencies wishing to establish or ex-

(Continued on Page 4)

'Do It Yourself' 360/25 Add-On Saves 70% Over IBM Equivalent

By Vic Farmer
Of the CW Staff

BEDFORD, Mass. – In what might be considered the start of a cost-saving trend for users, Cambridge Memories, Inc. (CMI) last week introduced a "do it yourself" add-on memory for IBM 360/25s.

CMI claims users themselves should easily be able to install, test, maintain and repair the add-on with a detailed instruction booklet and CMI-provided test programs. But perhaps the greater advantage is that the memory add-on will save up to 70% of the comparable IBM charges for an equivalent upgrade.

Upgrades will be available in four basic sizes 16K bytes over an IBM-installed 16K, 16K over IBM's 32K, 32K over 16K and 24K over 24K.

According to CMI, installation takes about two hours and consists of installing a 5-1/4 in. by 19 in. by 20 in. cabinet (including power supply) anywhere near the 360/25, plugging in the memory itself, running the test program and altering computer commands to accept the larger memory. There are no backboard wiring changes, CMI noted.

Pricing for the 360/Core 25 modules is 60% below IBM prices and the additional savings – to a total of 70% – comes from reduced field engineering and maintenance labor costs, according to CMI. Repairs for most common problems consist of replacing the plug-in modules, the firm added.

For Small Users

In explaining the switch to this "do it yourself" policy, CMI acknowledged that 360/25 users are mostly small organizations for whom equipment costs are of paramount concern.

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AT&T Asks Okay of Dataspeed 40 For Interstate Private-Line Use

By Vic Farmer
Of the CW Staff

WASHINGTON, D.C. – AT&T has filed a tariff with the Federal Communications Commission (FCC) which would allow interstate private-line communications users to install Bell's Dataspeed 40 CRT terminal.

At present, AT&T is only authorized to attach slower speed teletypewriters for interstate private-line use. Dataspeed 40 terminals are available, however, for intrastate private networks and interstate dial-up networks.

Pending FCC approval, this new tariff will allow users to rent and install CRT terminals with AT&T maintenance and service.

For a Dataspeed keyboard display and printer, the tariff proposes an installation charge of $195 and monthly rental rate of $205. In comparison, a Model 35 ASR Teletype has an installation charge of $50 and monthly rate of $130.

For a Dataspeed 40 keyboard display alone, the proposed installation charge would be $170 with a monthly rental of $135.

A receive-only printer would cost $145

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On Boston's 'Cow Paths'

Center Rushes to Meet Busing Deadline

By Edith Holmes
Of the CW Staff

BOSTON – Responding to a court-ordered desegration deadline, the School Department's computer center has been working around the clock to help attain racial balance in city schools this fall.

"Our task has been to provide each pupil with a school assignment under the provisions of the court order," explained Jim Dailey, DP manager for the center. "We've had to extend our usual pupil data base and develop programs for assignments that would consider and coordinate each child's address, school district, racial characteristics and so on."

Groupings Difficult

The initial problem was to break the city into geographical units the center's IBM 370/125 could handle, according to Dailey. "And Boston with its cow paths made the identification of students in reasonable geographical groupings very difficult," he added.

Working with maps of the city and the U.S. Census Bureau's system of blocks and its household census, the center broke Boston up into 800 blocks and assigned each student a geocode, or address, on that basis.

These geocodes provided the algorithm for programs which, in turn, asked the computer to associate the variety of factors needed to assign children to the proper school for their age, address and race, Dailey said.

Standard data mailers were purchased to notify youngsters and parents of school assignments, and principals received lists of children who would be attending their schools in the fall.

A Little Young

"Since then, we've worked to correct erroneous assignments," Dailey remarked. Information centers have been set up to handle every imaginable question and comment concerning the validity of the assignments.

The center has uncovered a number of mistakes this way. "One mother called to tell us we had assigned her second-grader to a high school," the DP manager noted.

But Dailey said the major problem facing the center has been misspelled or incorrect addresses of children. "You wouldn't believe how many ways there are to spell Main Street (Main St., Maine Street, etc.)," he exclaimed.

A full-time programmer was hired by the Educational Planning Center, the arm of the School Department responsible for wrestling with the logistics of desegregation, and he has worked with the computer center to write the necessary programs.

Even with the addition of one more person to his staff, Dailey said the school assignment project would have benefited from more time.

"Though we saw school desegregation coming a year ago and began laying the groundwork for the project by working with geocodes, we couldn't start actual planning until the court order made Boston's course of action clear," he added.

Unconventional

He said he and his staff had been "winging it" since then. "All of the people working on the project are professionals, and none of us likes to ignore documentation; but if we had followed normal DP procedures, we would have had to triple the time it took us to complete the job."

Now the center faces the task of regularizing the system. While Dailey acknowledged the DP division will probably be the busiest place in the School Department on Sept. 12," Dailey commented his staff will continue to work 24 hours a day until they have the right students in the right schools.

Will the experience of the computer center benefit the efforts of DP divisions in other cities attempting to achieve a racial balance in schools? "Our assignment program was generated in desperation," Dailey remarked. "We hope others faced with developing similar systems will call Boston."

'Do It Yourself' 360/25 Add-On Saves 70% Over IBM Equivalent

(Continued from Page 1)

If such organizations want to expand their computer memory, they must not only buy the memory, but pay labor charges for installation, conversion, upgrade, diagnosis and ongoing maintenance, a CMI spokesman said.

Larger Units?

When asked if CMI had plans to expand the "do it yourself" concept to larger mainframes, the spokesman said CMI's policy previously has been to match the exterior design and size of add-on memory to that of the CPU, even though the firm's memory is more densely packed and could be packaged in small cabinets.

This policy made the memory larger and in effect more difficult to handle. The real problem with "do it yourself" installations on larger machines, however, is the need to tap into the backboard wiring. This is unnecessary with the 360/25 because of its simpler wiring.

The Core 25 memory system is transparent in operation and operates with any level 360/25 processor, CMI said.

All IBM software, both operating and diagnostic, runs on the memory. Built-in microprogramming performs all needed code and command conversion with no user intervention, the firm added. Memory cycle time is 900 nsec.

The add-on was designed by CMI's German subsidiary and deliveries of the memory have already begun in Europe.

A typical 360/Core 25 configuration of 24K bytes is priced at $36,000 or $1,225/mo without maintenance, $1,300/mo with maintenance. Comparable IBM prices are $77,800 purchase or $1,435/mo with maintenance.

CMI is at 12 Crosby Drive, 01730.

Share Opens Door to CME Papers

(Continued from Page 1)

Other subjects are operating systems and related system software.

Problem programs, real-time and on-line systems, and hardware evaluations are included, as is information on virtual systems, planning and forecasting, and operations optimization.

"The rationale for releasing the [CME] volumes for public sale," Prutch said, "is to make a contribution to the DP industry in the areas of installation management, education, training and scientific research.

"Some of us wanted to give the material away, but that would lead to a lot of requests from people who wouldn't really benefit from the books after they got them. So we've set a price by which we just about recover our costs and screen out people who are just curious."

Volume 1 of the CME set has 487 pages and covers the years 1967 into 1971. Reflecting the strong recent growth of interest in the field, Volume II, covering 1971 through 1973, runs 829 pages.

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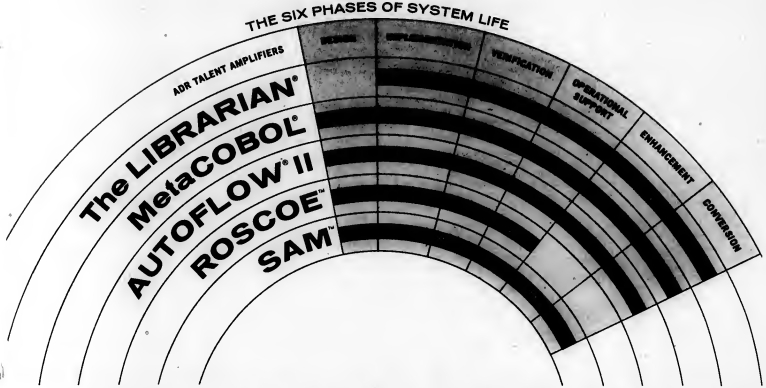

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'No Bid' VA System Ruffles Congressional Feathers

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – A new $50 million government computer project has come under criticism from Capitol Hill on grounds that it poses dangers to citizens' privacy.

Congressional critics, led by Rep. John E. Moss (D-Calif.), denounced the plan for still other reasons – the Target system was launched "without authorization or appropriation from the Congress" and, more importantly, "in violation of federal regulations that require competitive bidding" for such government expenditures.

The Target system has been proposed by the Veterans Administration (VA) as a means of improving that agency's handling of the nearly 16 million inquiries and claims received annually from the nation's veterans.

Already under way in Philadelphia is a $600,000 pilot project, initiated by the VA without competitive bidding, according to Moss.

Moss has asked President Ford, who still heads the Domestic Council Committee on the Right of Privacy, to investigate the scheme which, he charges, "could threaten the privacy rights of millions of U.S. veterans."

Manager Had Reservations

As a result of Moss' concern over the Target project, Ralph E. Smith, general manager of the Target system for the VA, was asked to appear before a group of House Appropriations Committee staff members to explain what the new Target system is all about.

Smith told the committee that the system would establish 2,300 remote computer terminals in 59 VA field offices across the nation and would link them to large computer sites in such facilities as the St. Louis Records Processing Center, which has about 20 million national records on file.

According to Smith, the agency intends to issue contract proposals in January 1975 and have the Target system in operation by December 1976.

Smith told the committee that he had reservations about a controversial decision to select IBM as the $600,000 pilot project contractor without any bidding for the job – a project that could lead to millions of dollars worth of future Target system contracts.

"There should be no sole-source procurement in government anywhere," Smith said. "It's not healthy."

Smith said further that, when the Target system is ready to operate, "nobody will give you security guarantees" that the system won't be used for purposes such as gathering personal information on veterans.

It was fear of data exchange among federal agencies that led Congress to kill the Fednet project earlier this year, and some critics say the VA is trying to sneak the plan through the back door the same way the General Services Administration (GSA) handled Fednet [CW, July 31].

Moss has asked President Ford "to institute an immediate probe of the Target system followed by intensive scrutiny of what other agencies plan in this sensitive area."

In addition to correspondence with President Ford, Moss has requested justification for Target from directors of the Office of Management and Budget (OMB), the GSA and the VA.

The OMB, under the Nixon Administration, approved the outlay for the Philadelphia pilot project and the GSA, under whose authority federal agencies purchase equipment and supplies, approved the purchase of gear for the pilot project without competitive bidding.

Senate Committee to Approve Privacy Measure

(Continued from Page 1)

pand information systems containing personal information would have to prepare a report on the potential privacy impact, the software and hardware security measures in the proposed system and consult with the National Bureau of Standards for guidance on security.

These reports would be submitted to a privacy commission, and agencies would not be allowed to start implementing such systems for at least 60 days after submission of the reports so they could be reviewed and hearing could be held.

Correction Procedures

The bill also creates an elaborate procedure for dealing with contested information. Agencies would be required to investigate any complaints that the information was incorrect and delete any information which was wrong or which could no longer be verified.

If there was a dispute over the information in the file, the subject of the file would be allowed to add a reasonably long explanation to the record to present his side of the dispute.

If the dispute was not resolved, the data subject would also have the right to a hearing in the agency within 30 days of filing a complaint and could then take the matter to court if still unsatisfied with the response.

In addition, any agency would have to take all reasonable steps to notify the subject of a record before any information in that record was turned over to others as the result of a subpoena.

The bill provides for exemptions for data banks in the area of national defense or foreign policy and for law enforcement intelligence files even though criminal history information would fall under the act.

However, any data bank operator that wished to have its system exempt from the statute would have to notify the public that it was seeking such exemption, explain what type of information was in the system and hold public hearings on the exemption.

Such exemptions would be subject to judicial review on the complaint of anyone, not just data subjects of the file.

Up until this point the House and Senate bills are extremely close in their underlying philosophy and wording, but they part company on the establishment of a privacy commission.

The Senate measure calls for a five-man commission made up of individuals not presently serving in the government and appointed by the President with the advice and consent of the Senate.

However, a move on the part of Rep. Bella Abzug (D-N.Y.) to add such a provision to the House bill was beaten back in committee last week.

Under the Senate plan, the commission would be mainly a study group but would also serve to interpret any of the rules laid down by the act in areas of dispute.

One of the primary purposes of the commission would be to study the need for laws in the area of private data banks and it would be required to report back in three years or sooner outlining regulations for this area.

One of the novel features of the Senate act is a provision to prohibit government agencies or others (including those in the private sector) from requiring individuals to provide personal information as a condition for employment or for any other service, except where specifically approved by law.

However, the Senate committee struck a provision from the bill that would have prohibited the use of the Social Security Number for any purpose – public and private – unless required by law.

The senators reportedly felt they did not have enough information to determine the overall implications and cost of such a measure at present.

However, the report that is being written to accompany the bill will express deep concern over the proliferating use of the Social Security Number as an identifier and will indicate that the matter should be studied closely with the eye to developing another law in this area.

Washington Optimistic on Bill's Passage

WASHINGTON, D.C. – "I'd rate the chances for a privacy bill this year as between six and seven on a scale of 10 and improving every day," one source in the executive branch said last week.

And that sentiment was echoed on Capitol Hill and by other administration sources with almost everyone involved in the privacy debate predicting some form of legislation this year.

There are several reasons for the new optimism.

First is the increased emphasis devoted to the issue by the Ford administration and the additional visibility of the Domestic Council on the Right to Privacy by Ford's elevation to the Presidency. The council itself is now well positioned to push for what it feels is workable privacy legislation.

At the same time, the numerous violations of personal privacy by the Nixon Administration documented through the Watergate mess have lent impetus to the bill as congressional and other sources want to place some regulations on the executive branch.

In addition, the Congress, which was tied up almost solely with the Watergate question, is now free to pursue other pressing matters and privacy is high on its list of priorities.

A further factor pushing for the adoption of some privacy legislation is the impending retirement of Sen. Sam J. Ervin (D-N.C.), one of the early privacy advocates.

Ervin reportedly wants to leave a privacy bill as a living memorial to his long struggle and his colleagues in Congress seem willing to go along.

County Shelves On-Line Registration Program

(Continued from Page 1)

had some problems last fall that led to the exit of the previous director" but said the payroll errors to which Lumbert referred haven't occurred since then.

The county will resume work on the on-line voter registration system after the election, he said, and eventually will put the system into use.

Postponed Implementation

Work on the project began last fall, with the goal of having the system fully implemented by early last June when voter registration began peaking.

In June, the system was in "pretty fair" shape technically but the task of training opcrators remained, Griffin said.

Since it is his belief that "on-line systems work only as well as the people sitting at the terminals know how to use them," the county decided to postpone implementation until after the big fall election, he explained.

In the meantime, the county can continue to rely on its batch voter registration system, he said.

Paul Marston, former county recorder who is now a candidate for secretary of state, originally proposed the system (He also approved the Wilson specifications, Griffin noted).

"I felt it was the only way we could handle voter registration," Marston said, adding that Maricopa is one of the fastest growing counties in the U.S.

Marston did the county's previous voter registration programming and stated he is probably one of the nation's leading experts on the subject of voter registration systems design.

He claimed Wilson "showed an incomplete comprehension of the problem [it] was going to solve."

Griffin said "way underestimated the amount of time fo take to develop the program," he added.

The system's file occupies two Honeywell DSU 190 modules in a dual 6040 system under GCOS utilizing the Integrated Data Store data base management system.

Lumbert confided the HIS mainframe had chugged away on the system for 24 hours at a stretch, and Maraton spoke of benchmarks which indicated the system would need "years" of elapsed CPU time to perform the biennial redistricting of voters.

Griffin defended the system, saying a one-time file load took over 24 hours but this included checks for duplicates and the establishment of very complex file relationships.

As for reprecincting, he said, it might take a day.

The county paid Wilson about $40,000 for the entire systems study and design, Griffin said, and the programming contract totaled about $30,000.

AT&T Seeks Datasped 40 Okay For Interstate Private-Line Users

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for installation with a monthly rental of $125.

Optional features listed under the proposed tariff include:

- Expanded storage: 48 lines, 80 characters for $10/mo; 72 lines, 80 characters for $20/mo.
- Additional editing capacity including protected format, substitute character, message preparation alarm, horizontal tabulation and highlighting for sets equipped with these storage capabilities: $18 to $24/mo depending on storage capacity.
- 1,000-character storage for receive-only printer: $60/mo.
- Message waiting alarm and parity check on roll call: $5/mo.

When more than one Datasped 40 terminal operates on a broader private line, the selective calling station arrangement will allow messages to be sent to any one or a combination of terminals.

In this arrangement the use of the communications line is controlled by the customer-provided line controller, according to AT&T. Datasped 40 printers can also be arranged on a broadcast network in that all terminals sharing the same line can receive the same message simultaneously, Bell added.

Datasped 40 terminals operate at 1,050- and 1,200 bit/sec compared with a Model 35 ASR Teletype speed of 150 bit/sec.

2-State Data Bank on Disabled May Save Government $1 Million

By Edith Holmes
Of the CW Staff

PHOENIX – Plans to computerize information on disabled persons in Arizona and California could save the Federal Government some $1 million, according to state officials here.

Designed "to expedite and control the orderly flow of an application until a person can be approved for benefit payments," the creation of a data bank on the two states' disabled should reduce clerical overhead and the number of advance payments required when claims are not processed quickly enough, commented Dan Dantine, chief of the DP Division of the State Department of Administration.

"We may also be able to develop more efficient standards for examining people with claims," he added.

Finally, the federal Social Security office should save money by contracting work to a single computer headquarters serving two states, he said.

Initially requested by California to solve problems caused by the shear volume and dispersion of its claims of this type, the system represents an agreement between the Social Security Administration and the states of California and Arizona and could serve as a model for other areas.

Dantine said Arizona was asked to develop the program because "California has its hands full with other computer projects right now," and because the southwestern state has the computer capacity to do the job.

He contended disability benefits can require more time to process than other Social Security payments because the amounts paid out depend on a greater variety of conditions.

"Under Title 2 of the act providing for disability cases, we must determine whether a worker has been disabled to the point of not being able to return to his/her normal profession, and Title 16 requires that the degree of disability determine the size of the payments," he said.

"When an applicant fills out an application, the case must go to one of the state's disability determination units before it can be processed," Dantine explained.

Monetary considerations aside, he said the key motivation behind the project "is to get payments out to the people who need them as soon as possible."

Once the data bank is established, workers in each disability determination unit in the two states will be able to call up and make additions to a file through a terminal system.

Dantine expects to have Arizona's files, compiled on dual Honeywell 6060s, up and accessible on-line by June 30, 1975. California records should be converted to the system by the end of that year.

When operational, the system will handle some 60,000 Arizona records and over 353,000 files for California each year, he said.

Because the system will contain so many records of disabled persons, in addition to information on the doctors and other personnel who participate in the

Computer Files Take Over Bookkeeping on Beekeeping

GUELPH, Canada – Since 1969, the University of Guelph has spent about $100,000 computerizing data on beekeeping or apiculture., professional beekeepers were told at a meeting here recently.

Within two years, the school expects to have almost all available information on bees and beekeeping stored on computer tapes, a university spokesman said.

Records will include data dating back to the 1400s, he added.

Tornado Wilts Grocery Service

LOUISVILLE, Ky. – Computerized shopping, like vacation plans and sporting events, is subject to the vagaries of nature – both human and Mother.

Call-a-Mart, the computerized food market which began operating in this area a little over a year ago [CW, June 20, 1973], has learned that people use the service more or less depending on the weather, sickness at home and buying patterns.

A tornado which hit this city last April made a great impact on the service because the entire east end of Louisville, the area in which the service originated and in which 30% of the families are Call-a-Mart members, lost its power and phone lines.

"And if a member doesn't have a phone or electric power, it's pretty hard to buy from us," said Mark Weiss, Call-a-Mart's president.

"[The tornado] changed a lot of people's habits and buying patterns," he commented, "and a lot of people got food stamps [which Call-a-Mart does not accept] or were out of their homes for a long period of time.

"There's no denying that it had an effect on our volume of business."

But Weiss denied newspaper reports that the business might have to close. He admitted the firm had sent out a letter to its members saying "we need your help and support and we need you to shop with us regularly or we might be forced out of business."

"It was a way to get some additional sales through the summer months when our volume was light," he said.

To use the system, the 20,000 members phone in their orders after selecting items from a catalog. Operators punch the orders and a computer tabulates the total cost, processes the order through the warehouse and prepares delivery truck routes.

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Motorized Mini Driven to Scene Of Accidents to Define Causes

By Nancy French
Of the CW Staff

BUFFALO, N.Y. – A computerized system designed to help save lives by defining the causes of highway accidents has been developed by Calspan Corp. here.

Housed in a Dodge Maxivan, the system consists of a CRT terminal, a minicomputer and other electronic gear linked via radio-telephone to a large computer at another location.

When an accident occurs, the van is driven to the scene, where investigators quickly gather pertinent data such as the type of accident, descriptions of vehicles involved and damage done to them, the presence of skid marks and tire tracks and notes on obstacles, debris and the terrain of the accident site.

Testimony from drivers and witnesses is also gathered, and all data is keyed into a Tektronix 4010 graphic display terminal.

The data is held and processed by a Texas Instruments Model 960A minicomputer with 24K memory until ready for transmission to the central computer via radio-telephone.

The central computer handles the investigation as a batch job, using a program known as the Simulation Model of Automobile Collisions (Smac).

Spots Inconsistencies

The computer ranks the importance and reliability of various items of evidence and informs accident investigators in the field when it has sufficient information to reconstruct the mishap.

If there are inconsistencies in any measurements made at the scene or in testimony from drivers or witnesses, the system requests a repeat of information, according to Raymond McHenry of Calspan's transportation safety department.

It also provides a statement on the contributing factors and principal causes of the accident and can even indicate possible infractions of highway laws.

At any time during the investigation, the minicomputer in the field van can provide an "instant sketch" of the reconstructed accident up to that point – either via the CRT or in print.

According to McHenry, the computerized accident information can be used to:

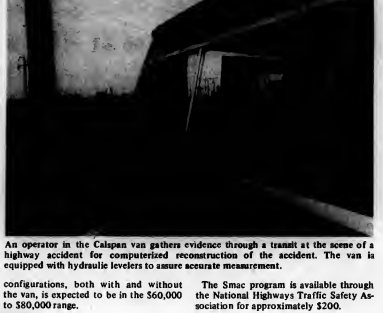
- Evaluate the safety of various makes of cars and the merits of existing safety devices.
- Determine causes of accidents and injury and the role of the driver, the car or the highway in a given accident.
- Develop improved information on human tolerances to injury to aid the design of new safety devices.

Although the Calspan system for mathematical reconstruction of accidents is highly sophisticated, it has been electronically automated for operation by policemen with a minimum of additional training.

The design and testing of the prototype unit was conducted under contracts totaling $850,000 from the National Highway Traffic Safety Administration of the U.S. Department of Transportation.

The system is now ready for field testing by several police departments in the Buffalo area.

Sale price of the equipment in various configurations, both with and without the van, is expected to be in the $60,000 to $80,000 range.



An operator in the Calspan van gathers evidence through a transit at the scene of a highway accident for computerized reconstruction of the accident. The van is equipped with hydraulic levelers to assure accurate measurement.

The Smac program is available through the National Highways Traffic Safety Association for approximately $200.

Guards Against Fire, Theft

Firm Finds Employees Only Bug in Security System

ELMSFORD, N.Y. – An extensive electronic security system installed by Mathematical Applications Group, Inc. (Magi) over two years ago has been successful in protecting the computer applications company against large-scale losses that could result from fire and burglary.

"We've had no technical problem with the system," a Magi spokeswoman said. She added, however, that some company employees "occasionally forget just how exact the system is," and omit the procedure which prevents activation of the alarm.

Installed and maintained by ADT Security Systems, the comprehensive warning and protection devices guards computer equipment in a 12,000-sq-ft facility. The building houses an IBM 360/65 in addition to a smaller computer used exclusively for visual simulation in the creation of computer movies.

Magi, whose business includes computer programming and direct mailing systems in addition to computer movies, purchased the security system also to protect a vault of customer tapes and information from internal theft, according to the representative. She suggested this is the primary reason why security at Magi is so elaborate.

Ultrasonic Sensors

A space protection approach in the form of an ultrasonic sensor mounted above the tape storage racks is used in the vault, the spokeswoman said.

To prevent intrusion by persons outside the company, the security firm installed a standard central station-connected burglar alarm system of the commercial and industrial type. The system includes perimeter protection devices, such as magnetic contacts which indicate when and where doors and windows are opened while the alarm sounds, and additional space protection devices.

To detect and combat fire in its initial stages, ADT mounted smoke detectors at intervals on ceilings throughout the Magi facility. If employees are present at the time of an emergency, and if the fire seems small enough to be brought easily under control, they can deactivate the alarm within 45 seconds.

If no one is present when the fire develops, or if the blaze is out of control, automatic control systems will shut down all ventilating or air conditioning equipment to inhibit the spread of smoke or sparks and initiate a flow of Halon 1301 fire extinguishing gas through port openings in the ceilings, the spokeswoman explained.

If there are problems in the fire extinguishing system, the alarm system will transmit a coded signal indicating a fire alert at the computer installation to an ADT central station, and supervisors there will call the local fire department.

"We didn't want an alarm system that would be difficult to live with," Dr. Phillip S. Mittelman, Magi's president, commented when the system was installed in April, 1972.

To allow authorized personnel to come and go with maximum convenience, a small panel with pushbuttons was installed, permitting employees to deactivate the burglar alarm system when they enter and leave the building.

An employee has 30 seconds once inside the main door to enter the correct four-digit code for deactivating the alarm.

"What problems we've had with the system occur when people leaving the building neglect to enter the code disconnecting the system, and the alarm goes off after they've left," the representative remarked.

She noted codes are changed whenever an employee leaves Magi. "While some may consider it a nuisance to memorize new codes, the whole process involves much less bother and cost than a system of keys would," she concluded.

Asimov, 'Bearish on Survival,' Endorses Computers

By Nancy French
Of the CW Staff

RENSSELAERVILLE, N.Y. – Popular science fiction author Isaac Asimov, who says he is "bearish about our survival," told an overflow crowd here recently that without help from the computer, survival is probably mankind's "least likely alternative."

Asimov said maintaining enough food and energy for a constantly growing world population is the chief problem facing mankind.

The solution, according to Asimov is "greater use of available tools such as the computer.

"Our technological society was not forced on mankind," he explained. "It grew out of the demand of human beings for plenty of food, warmth in winter, coolness in summer, less work and more play.

"Unfortunately, people want all of this plus all the children they feel like having, and the result is that technology in its command performance has brought us to a situation of considerable danger," Asimov said.

The Numbers Game

The solution is more computerization, not less, Asimov said.

Declaring that the name of the game is "Number with a capital N," Asimov illustrated his point with examples – Zip codes (because "we've overloaded the post office") and Social Security Numbers ("try to run the tax system without them").

"I want to see every man receive a long and complicated code of identification, periodically brought up to date so that every birth, death, change of address, new job, every sickness, yes – every arrest, is constantly recorded," he said.

Asking whether the audience would consider this an invasion of privacy, Asimov answered for them by saying, "We lost that fight a long time ago.

"Once we agreed to an income tax, we gave the government the right to know what our income was and, finally, to poke into every meal in every restaurant, to leaf through every record."

Calling privacy "a modern invention," Asimov said throughout history man has always "huddled together in caves or palaces.

"The only time you have real privacy is when you live with your immediate family, your mate and children and inanimate servants," he said.

Posing the question, "Will ultimate computerization wipe out initiative and creativity and individualism?", his answer was another question: "When did we ever have this?

"The history of administrative ineptitude, of bureaucratic savagery, of all the injustices and tyranny of petty officialdom, long antedates the computer," he declared.

"Show me the society at any time in the world's history in which there were no wars, no famines, no pestilences and no injustices."

The speaker appearing at the Institute of Man and Science here, attacked nonscientists who have taken control of technology and who "are perfectly willing to pander to human greed for the immediate benefit and the immediate dollar."

He urged countries of the world to "computerize themselves properly" and "to work out compatible computer programs together."

Two Wrongs Make a 'Theft'

DES MOINES, Iowa – A data entry error in the conversion from a manual to an on-line computer registration program led to a predictable result here recently.

Clyde Zenor Jr., 18, came home from work one day and found his car wasn't where he had left it.

"The next day the police told him they had impounded it, and they kept saying he had stolen the plates," Zenor's mother reported.

The problem didn't clear up until Zenor's automobile title and registration were taken to the courthouse for verification at the treasurer's office.

The county then discovered that it had two identical vehicle numbers in its registration data base, County Treasurer Fred Horner said. When police inquired into the data base, the system brought up a description of the other car first.

And this is why Zenor appeared to have stolen plates on his car, Horner explained.

Zenor submitted a written statement to th Polk County Board of Supervisors explaining the mixup. Convinced, the board voted to reimburse him for the $7.50 towing charge, the $6 storage fee and the 41 cents in tax he had to pay to get his car back from the police.

"It's only the first error like that we've had, although we've converted thousands of registrations to the computer," Horner said.

DPers Laud Lessons Learned at Standards Seminar

By Edith Holmes
Of the CW Staff

NEWTON, Mass. – Attendees of a Brandon Applied Systems, Inc. seminar generally approved of the course's emphasis on planning and estimating in developing standards for project management and control, a recent *Computerworld* survey found.

More than half of those interviewed, who had attended the "Data Processing Standards" course offered four different times in four separate locations since December 1973, said they had learned from suggestions made in "resource estimating, skill identification and scheduling."

"I discovered estimating and preliminary planning for a project receive more emphasis today than they used to," remarked Larry Flynn, a project supervisor at the New York State Electric & Gas Corp.

Course hints in resource utilization "provide a practical approach I plan to try," said Henry V. Charnell, system requirements manager for Boeing Computer Services.

In keeping with Brandon's philosophy of applying the "how-to's" of developing good standards to a broad area like project control, many participants commented they took the course to learn techniques for implementing standards in their particular projects.

Others said they attended to evaluate the course for use within their companies, and still others claimed they participated to learn various methods of handling project control difficulties.

Many surveyed felt the course would be of maximum benefit to those unfamiliar with project management and control. They agreed the seminar would help "those just entering the field" or "first-level management at the single-project level."

"This course is for the newtimer," said Flynn. "If I had had this 30 years ago, I would have gotten much more out of it."

But the survey found that most felt they came away with "a couple of good ideas."

John Armbruster, manager for the program management office at Sperry Univac, said he developed an appreciation for the need "to define milestones in a project so they are measurable."

Project control assistant for the Chemical Abstracts Service at Ohio State University John O. Landers said he left the seminar with "an increased understanding of the need of communication of control methods and procedures to users in management."

"I picked up some new techniques for evaluating required skills and sizing up projects with regard to staffing them," said Gary A. Crowell, corporation teleprocessing coordinator for Weyerhaeuser Co. of Tacoma, Wash.

Speaking for a number of his classmates, Charnell commented, "I appreciated the checklist – rather than the cookbook – approach to project management."

More than half of those surveyed also endorsed Brandon's workshop and case study approach to teaching standards.

"The instructor made sure that everybody, regardless of experience level, participated in workshops and presentations to the entire course," said Russell Griffith, systems analyst for Pacific First Federal Savings & Loan In Tacoma. "Even those with minimal experience had to get up and act like project managers."

But there were those who didn't find the workshop format so instructive. A developmental planning analyst for the Social Security Administration, Caroline A. Brooks, questioned the value of the team approach under time limits where "the most experienced person in the group tends to take over.

Professional Development

"In that situstion, you operate on the basis of what you know already and not what the instructor has taught you," she commented.

Some debated the kind of audience at which the course was aimed, according to the survey. Because "government agencies don't stress user interplay and the course emphasized user involvement in a project," Brooks suggested the seminar served the needs of industry more adequately than it did those of government.

But while other participants noted an orientation toward business applications, they argued with the suggestion that the course was "tailored to meet the needs of industry."

"I'm involved in scientific applications, so the course required some translation," commented Charnell, "but the principles are the same."

"It's difficult to tailor a course to fit the specific needs of every participant," Armbruster said.

And Landers noted that "certainly, not all the methods described applied to our situation."

Dominick T. Salute, computer systems specialist for the Florida Power Corp., summed up the attitude of many when he said, "I went to the course with the idea: here's one comprehensive management procedure. I expected to apply it on my own."

School Days

Sept. 30-Oct. 1 – DP Career Structures and Development; New York*; $275; Brandon Applied Systems, 161 N. Kent St., Arlington, Va. 22209.

Sept. 30-Oct. 1 – Data Communications: The Executive Imperative; San Diego*; $350; Computerworld EDP Seminars (CW), 797 Washington St., Newton, Mass. 02160.

Sept. 30-Oct. 2 – How to Develop a Long-Range DP Plan; San Francisco*; $385; Brandon.

Sept. 30-Oct. 2 – On-Line Information Systems; New York*; $425; U.S. Management Research Institute (USMRI), P.O. Box 25524, Los Angeles, Calif. 90025.

Sept. 30-Oct. 2 – Project Management Workshop; Boston*, $425; USMRI.

Sept. 30-Oct. 3 – Systems Workshop; Boston*; $550; Ware Associates, 38 Main St., Hudson, Mass. 01749.

Oct. 2-3 – Performance Management of Data Base Systems; Atlanta*; $275; Performance Development Corp., 32 Scotch Rd., Trenton, N.J. 08628.

Oct. 2-4 – Maximizing Programmer Productivity; New York*; $425; USMRI.

Oct. 2-4 – Improving Data Entry Productivity; New York*; $425; USMRI.

Oct. 3-4 – EDP Orientation for Secretaries, etc; Boston*; $175; USMRI.

*Also scheduled for other cities later.

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Editorials

Share and Share Alike

Share and President Shirley Prutch are to be saluted for breaking with the closed tradition of the users group and publishing – for all of us – papers the computer measurement and evaluation (CME) project has collected over the years. Choice of the CME papers as the first of what may be many such publications is encouraging since systems tuning is an area in which many installations are interested, but one in which many more should be involved.

Having worked with authors and the companies they represent, we can appreciate, perhaps better than our readers, the effort Prutch must have put in to get the project members to share their writings with a broader audience. One of the concerns the authors had, she said, was that they would gain nothing by the release of their writings.

With that in mind, she urged users already involved in CME work to study the books – particularly Volume II, covering the more recent project work – and to provide feedback, to share their experiences and ideas with the user group.

Such two-way communication may be just what Prutch and the rest of the Share leadership need to shake loose the internal papers of other projects.

To the benefit of all of us.

Small Step Forward

The decision by the Medical Information Bureau (MIB) to warn insurance customers that their records may go into a central information file and to provide a means of access for individuals whose files are held should be a lesson for other data bank operators.

Previously, the MIB had argued that its records only went to insurance companies and therefore those affected by the records did not need to be notified that the files were being kept.

At the same time, MIB pointed out that keeping records on persons turned down for insurance by one company was a good policy because it prevented persons not eligible for insurance from getting it, thereby keeping down the rates for all policyholders.

However, the system had no self-correcting mechanism. If an error was made in a record, there was no way for the subject of that record to discover the mistake and have it corrected.

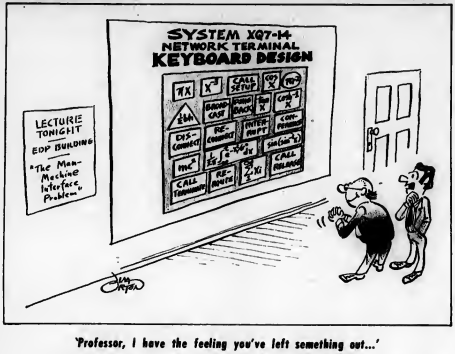
The new notification and inspection procedures should go a long way toward correcting that problem, which should benefit everyone.

The consumer will know there is a file being kept about him and can have his doctor inspect it if he feels it contains erroneous information.

The MIB will also benefit from cleaner files, since erroneous data will be weeded out of the file over time and can therefore provide better information to the insurance companies that back it.

What is surprising is that it took so much publicity, several rounds of congressional hearings and pressure from the insurance commissioners of two states for the agency to take this first small step forward.

Other operators of computerized data banks can learn a lesson from this by adopting similar procedures before being forced into action by watchful government officials.



'Professor, I have the feeling you've left something out...'

Letters to the Editor

Criticism of Proceedings Delay In U.S./IBM Case Unjustified

Some of the criticism in the Aug. 7 editorial regarding the conduct of the U.S. antitrust case against IBM is not justified by the facts.

The speed and gathering momentum of the case since coming under the control of Judge David Edelstein is entirely commendable. A "simple" matrimonial divorce case often takes years of litigation prior to resolution. This complex economic case has mandated that the participants be educated as computer industry specialists on a world stage.

The comment that "lack of action on each side is particularly disturbing" is both unkind and unwarranted by the facts in as much as both sides and the court have been diligently working day and night for months without vacation to meet the tight trial schedule.

The observation that the government refuses to put enough manpower on the case to uphold its side is unlikely to be shared by IBM, most of whose motions to narrow the issues and limit discovery have been denied.

The present delay is primarily due to the necessity of bringing together all the various housekeeping legal procedures including rulings on privileged documents by the Special Masters.

The 60-day delay is not catastrophic and will ensure that haste does not endanger the high legal standards required in the case.

The overriding necessity for speed may be to ensure that court judgment of the fragile and peaceful computer empire is not overtaken by events in technology and the increasingly hostile world.

"But men may construe things after their own fashion,
Clean from the purpose of the things themselves." – Shakespeare's Julius Caesar.

William Baynham
Hardy & Co.
New York, N.Y.

Let's Manage, Not Discard, Changes

Once again the call has been made to eliminate all pain from changing computer systems. This time it was succinctly put by Robert G. Frerking [CW, Aug. 7]: "A goal should be to enable users to move from one hardware vendor to another with the ease of replacing a Chevrolet with a Ford automobile."

No matter how well it is stated, it is just not realistic. Automobiles are labor-intensive devices with relatively wide tolerances of preparation, maintenance and operations (albeit with an occasional ABEND). Computers are not.

A more accurate analogy is with precision manufacturing equipment. When such equipment must be replaced, there are problems of redesign, differences in power needs, changes in operating procedures. Here the differences are identified and managed. We would do well to take the same approach.

If we try to eliminate all differences, we throw out the baby with the bath. If we concentrate instead on managing change, with all that implies, we can incorporate real improvements and provide at the same time a built-in penalty for whimsical incompatibilities.

If top management had no problems with data handling, we would have no jobs. Our calling is not to eliminate all problems, but to handle them.

David L. Shuman
Anderson, Ind.

'Think' Is IBM's Best Product

We at Greyhound Computer Corp. believe DP decisions should be made only after careful study of all financial and equipment alternatives. Thus, we were disturbed with the quality of decision-making that went into Beconta Inc's order of the first 370/115 from IBM [CW, July 24].

To quote Beconta's DP manager Dennis Hickey, "... so when the 115 was announced, we immediately ordered one ... not even knowing really what the heck we were going to get."

We still believe one of the best products IBM ever produced was the slogan, "Think." If one thinks before making DP decisions such as this, then one has to consider the many alternatives to merely renting the latest IBM model.

G.B. Clarke
Senior Vice-President
Greyhound Computer Corp.
Phoenix, Ariz.

Oh Those Generalizations

I can understand the annoyance of R.F. Becker about my letter in the July 31 issue about the work of systems analysts. The article was placed under the headline, "Nonprogrammers Not Good System Designers." The headline was that of *Computerworld*, not mine.

My experience has led me to the conclusions stated in the letter. I would like to state again that I do not claim my experience to be valid for all systems, only those with which I have had experience.

Richard F. Mittleman
Senior Programmer/Analyst
William O'Neil & Co.
Los Angeles, Calif.

(Other letters and viewpoints on Pages 9 and 10.)

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Highly Personal

Every couple of months a letter to the editor is followed by a "Grosch disclaimer" – most recently in connection with my Honeywell piece. I've been aboard over a year now, summer doldrums are over and the hustle of early fall is upon us. Seems to me it's a good time to rehearse my role in this column. Our paid subscriptions approach 65,000, and surveys indicate four or five people look at each copy. That means tens of thousands of readers who don't know me from Adam or Atanasoff. For them, to amuse my friends, and – I have to admit it – to further initiate lovers of puffy programming, the Arpa network and IBM salesmanship, a few perspectives:

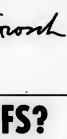
I'm *not* a journalist or an investigative reporter. I write this column as a computer pioneer, one of the last of the antediluvians. There are of course dozens of others still at work, especially in hardware design; on the user side, very early figures like Jack Belzer in the U.S. and Leslie Fox in the UK are still vigorous. But of the little gang that was writing nonstored-program code and wiring plugboards in 1945, only Grace Hopper and I are really still yanking on the reins, still punching hard. She's an optimist; I'm a beastly, albeit reluctant, pessimist.

And I welcome the place CW gives me to stand on, because this paper is devoted to the computer *user*. I personally care little for industry executives, and not at all for their captive stockholders, except insofar as they are also personal friends or computer users. I care deeply about the hundreds of thousands of newcomers who are caroming about in this crazy racket, trying to tell the put-ons like virtual strange from the valuable recommendations like dedicated minds.

Many times a year, in articles and speeches and casual conversation, I repeat my predictions that most mainframers will die of incompetence and insufficient market, that the two or three potential survivors will be killed off in the late 70s by the FS announcement, and that IBM will own the earth.

I *don't want* these things to happen! They will be bad for the user community and the professionals I worry about. I may be accelerating the process slightly by the acts of prediction and promulgation. But I see that future as inevitable unless new routes are opened, new initiatives taken. I can help more by pushing user cooperation, advocating new architecture and simpler software, throwing rocks at ICL and Honeywell, than I can by keeping quiet.

I've been pushing buttons for almost 40 years. I travel a hundred thousand miles annually to meetings and on visits. I've got friends and enemies and correspondents from Novosibirsk to Bora Bora. I've just been elected vice-president of the senior computer society. And I care – most of all, I care. Dammit, I care very much! I want computer people and their peculiar tools to be a force for good in a gravely ill society. Take me seriously!



Herb Grosch

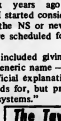
Will IBM (As We Know It) Survive Entry of FS?

In the days before System/370 – some five or six years ago – the planning staff of IBM started considering what would follow the NS or new systems (370) that were scheduled for announcement.

The consideration included giving the successor systems a generic name – FS. I haven't seen any official explanation of what the name really stands for, but presumably it is for "future systems."

Originally these Future Systems simply provided a convenient end-point to the financial calculations involving the expected life of the 370/155 and 158, 165 and 168, etc. FS-1, the successor system to the 145, for instance, was targeted for announcement in December 1976 with delivery to the first customer a year later.

The Taylor Report
By
Alan Taylor, CDP



Based upon these assumptions, IBM planners expect to keep building 145s until 1977 and to keep servicing them for their leased customers until 1979.

Other replacement machines were targeted at other times: the 155 replacement some six months after the 145 announcement, in June 1976, again with a one-year delivery time; the 135 replacmenet (FS-O) yet a further six months out, and so on.

At the time these items were orignally entered onto calendars and into calculations, they were only of accounting interest. But now the situation is changing.

The year 1976 is now only two years up the line and user system analysts are now hearing vague rumors about the coming FS series; they're beginning to worry about "planning ahead" with any particular non-IBM vendor over a four- or five-year period.

If the FS series is as powerful as it is thought to be, will the independent vendor be around when the dust settles? Will it really be able to successfully compete with the great power of IBM?

Wrong Question?

This is a good question but I think, after reviewing the situation, that it is somewhat off-base. The real question that exists here is whether IBM itself will survive the FS series – at least in a recognizable form.

(Computer corporations, together with their customer base, seem to be able to survive in some salvaged form and indeed to continue to be useful to the customers. For example, Vistron and Memorex computer users continue to operate quite happily and the former RCA and GE users are now major members of the Univac and Honeywell families.)

This may sound like heresy, but the history of the past 15 years is certainly enough to make the question academically valid, while the events of the last 15 weeks suggest that a pretty serious possibility exists that the answer may be "no."

IBM as we now know it will not be among the survivors of the FS systems!

Historically, IBM has counted on its own customer base for its essential volumes. The 1950 success of the 1400 series in keeping the 80-column tab shops from moving to the Remington Rand 90-column, Univac solid-state computer was the first of the two customer base conversions that have so far occurred.

The second (1960) success was the continued card conversion and the conversion of the still 80-column card-origned 1400 systems into the basic Models 30 and 40 of System/360. The early 1970 success – System/3 – has practically completed the IBM punched card conversion, leaving FS with no equivalent base on which to build.

FS, therefore, poses a unique challenge to IBM.

On the financial records, as we all know, the volumes involved were so great that the IBM profit figures have always been superb by comparison with the other computer companies. But, in fact, all that happened was that each of the various computer vendors have, by and large, managed to keep their precomputer era customer base and that was all.

If, in 1958, someone had ranked the eight major vendors by their precomputer customer bases, then the current survivors could – with one exception – have been correctly forecast.

IBM would have been on the top with the 80-column card users, Remington second with the much smaller 90-column card market; then NCR, with its cash registers; and Burroughs, with its accounting machines, and that would have been all.

Honeywell's thermostat, RCA's televisions and GE's regrifertors, while providing both technical capability and financial strength, lacked the essential ingredient of customers who, knowing that the aspiring computer supplier had the history of successfully coping with business data processing without computers, would be prepared to give them computer business also.

Why Honeywell Survives

The exception to the pattern is Honeywell. This really came about in the second 1964 era conversion of the IBM punched card base, and its survival provides perhaps the most dramatic clue to the dangers that may exist for IBM in the future.

In 1960 or so, Honeywell bad on its hands a technical success, the multiprogramming H-800 with an advanced operating system, and a financial problem because users were simply not educated to use multiprogramming or operating systems.

Honeywell then conceived the liberation approach toward the IBM punched card customer preserves. They carried this approach out so effectively that, as we now know, they forced IBM into announcing ahead of time the System/360, in what is now seen to have been a dangerous but successful gamble.

The problems resulting from the early announcement – poor, delayed software, etc. – together with the six-month lead Honeywell got on System/360 – was enough to let Honeywell acquire a customer base. Effectively, then, IBM's lack of preparation for System/360 gave Honeywell the opportunity to gain entry into the mass commercial data processing field even though Honeywell did not have a convertible precomputer customer base.

In fact, Honeywell's corporate leadership took the 1963 360 unpreparedness opportunity and used it to gain not merely entry but leadership at the Number 2 level!

That was as good as could have been done in the situation and an equivalent opportunity may occur again for some bold IBM competitors.

But the Future Systems are going to bring out the whole conversion problem again because, as one of the documents puts it, IBM does not have the opportunity to build upon a preexisting base with the FS series.

So the very advantage that has previously seemed to carry it to the top may, in fact, be abandoned – something which certainly opens up the question as to whether it is going into as big a gamble with the FS systems as it did with the System/360. And whether, if so, it is going to be successful.

Before that question can be intelligently reviewed we need to know something more about the characteristics of the FS. These will form, then, the content of future Taylor Reports that will list some of the published characteristics so that we may make some evaluations.

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What Fee Would You Pay?

The card above was received just before the school year started from a private high school. No explanation accompanied it. What fee would you pay and what comments would you make to the DP manager?

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Letters to the Editor

Aim for Certification, Throw Out the Ignoramuses

A.F. Curras [CW, Aug. 21] apparently misunderstood the intent of my letter [CW, July 31] regarding certification. Any arrogant or humble "ignoramus" with or without a college degree must be weeded out of our field before we can claim our discipline is a profession.

The average DPer is hired based upon a two- to three-hour interview and his resume. Normally, the interviewer is a middle-line manager who had his start in EAM and, all too often, he has not progressed beyond this point. Even if he is a true professional who has kept current with the state of the art, the hiring criteria used is highly subjective and extremely inefficient.

Once a programmer or an analyst has been hired, there seems to be some rule which disallows the new employee to be fired for incompetence. Apparently, this action would reflect upon the ability of the person responsible for hiring him (or her) in the first place.

That is why we end up with so many ignoramuses in our field – they are never weeded out. When was the last time somebody in your company was fired for incompetence?

It is precisely in this area where I see some light at the end of the tunnel in the form of the CDP program. Certainly, the program needs improvement. Currently, the CDP program only guarantees a standardized base of knowledge at the time it is awarded; it does not guarantee that the holder of the credential has kept current or that he is able to use this knowledge.

But we have a start; let us not lose it through apathy. Let us get involved and work toward improving it.

Jens Christensen

Neptune, N.J.

The Man Who Started It Still Holds to Convictions

Having started a discussion on the value of certification [CW, July 31], I was interested in the letter from A.F. Curras in the Aug. 21 issue.

The writer blurs the distinction between technical skills and professional competence. Are we addressing the ability of an individual to translate a business problem into a series of machine and manual processes or are we talking of the selection and identification of problems and their solutions?

The writer equates DP professionals with nuclear physicists and doctors. I think the comparison should be to credit managers and purchasing directors. There is no certification for inventory managers, yet this job requires a blend of technical knowledge and business experience.

If top management is not going to abdicate from decision-making in the areas of what to mechanize and what is required of a system, then technical skills are the measures of competence to review. No test will judge a 370 OS programmer and an RPG-II analyst well. Testing becomes so broad-brush as to be meaningless.

Let's abandon certification and work toward a statement of ethics for DPers. I'm sure that many of the Equity Funding DP people could have passed a certification test.

Al Smith

South Bound Brook, N.J.

Not Rocking the Boat

I found the article "Raw Count of Instruction/Day May Reward Poor, Not Good Code" by William A Delaney [CW, Aug. 21] very interesting.

This article restated an important point: members of the computer community are subject to the ills of big business and society – how long will it take and how much will it cost? I call this the "time and money principle."

Incompetents perform well when the eyes of Big Brother (or should I say Big Sister) are watching and often they move up the ladder while competent people remain stationary. Management should be aware of the differences in the quality of work, but unfortunately very few managers are capable of doing so.

The system has decayed to the point where "don't rock the boat" is a common underlying theme. One must learn to accept this in order to succeed.

Mark L. Kaiserman

Detroit, Mich.

Second Time Around?

I enjoyed the article by William Delaney in the Aug. 21 issue. Of course, I also enjoyed it the first time I read it, which was in *The Psychology of Computer Programming* by Gerald Weinberg (page 165). Better than a third of the article was a direct quote from the book.

Ronald Transky

Philadelphia, Pa.

The Defense Rests Its Case

In the Aug. 14 issue of *Computerworld*, Fred F. Newpeck attempted to criticize the presentation I made at the NCC session "Business Data Processing – A Decade of Failure" [CW, June 19]. Unfortunately, he apparently failed to read and evaluate the points which were made in the paper.

Newpeck states that the word "vocational" is not in the session title and therefore all of DP education is included in the criticism. I would hope that Newpeck would not put so much stock in titles as to go to a theater showing the movie "Deep Throat" and expect to see a wildlife story about giraffs.

His comment that I have not spoken with one university DP professor is totally incorrect. I have had the opportunity to converse with a number of DP instructors at the university level and, interestingly enough, many of these professors agree with the points made in my paper.

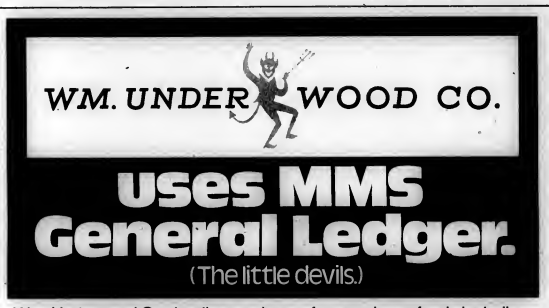
Lastly, Newpeck said that "Shelly is partly the cause of DP education failure" and "the only solution is for DPers like Shelly to read and contribute to that body of knowledge." I feel I have significantly contributed to the body of knowledge in DP education as I have coauthored 15 textbooks on business DP.

I invite Newpeck and others to comment on the content of my paper. If they feel I am wrong, point out where I am wrong.

I would hope, however, that future critics will at least take the time to be aware of that which they are criticizing.

Gary B. Shelly

Fullerton, Calif.



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Random Notes

Still Another RDOS Sort Created for Nova Minis

ROLLA, Md. – Users of Data General Nova minicomputers can consider another sort facility from an independent software house: Sort1 from Iotec, which is written in Assembly language and runs under the real-time disk operating system (RDOS).

Sort1 includes user-callable subroutines to perform ascending or descending sorts on up to 40 user-specified fields. It also has a system utility to interface the RDOS command line interpreter and the main sort routine. Thus, Sort1 can be accessed from the console keyboard or the user program to sort sequential, random or contiguous files.

Sort1 occupies a maximum of 4700 words of storage. It can be purchased for $750 from Iotec at 303 E. 18th St., 65401.

'Strobe' Measurement Routine Modified to Report VS Data

CAMBRIDGE, Mass. – The Strobe program measurement program from Programart Corp. is now available for use under OS/VS1 and VS2.

The package produces a nine-part profile showing how a program uses computer resources. References are to user source code procedure names and files rather than to specific memory locations.

Experience with the first, VS user indicates that "substantial" cost savings can be achieved by JCL and minor rewriting to avoid inefficient coding.

Strobe can be acquired for $9,400 from the vendor at 133 Mt. Auburn St., 02138.

Track Mapping Capabilities Included in 'Panda' Update

OAK BROOK, Ill. – OS/360-370 shops can keep better control over disk usage with version 2 of Panda, the direct access device Analysis/Management System from Pansophic Systems, Inc. The update adds track map capabilities to the systems volume reports.

Other changes include optional analysis of partitioned data set dead tracks, expansion of the volume summary showing more free space information, and support for IBM 3330 Model 11, 3340 and 2305 direct access devices.

Panda is available for $1,800, or $180/mo for 12 months, from 1301 W. 22nd St., 60521.

Correction

The vendor of the Data Access Security (DAS) system [CW, Aug. 7] is International Computer Trading Corp., 465 California St., San Francisco, Calif. 94104.

Two Years After Introduction

User Still Controls VS Performance

By Don Leavitt
Of the CW Staff

PHOENIX – "Certain weaknesses in previous operating systems have been corrected [in IBM's virtual storage (VS) systems] but optimum performance is still very much under the user's control," according to the August issue of *EDP Performance Review*.

In the first of a two-part report which – intentionally or not – coincided with the second anniversary of IBM's original VS announcement, editor Philip C. Howard attempted to summarize the aspects of VS systems that are unique with respect to system performance.

He covered some theoretical points but used much of the issue on those "things that programmers, systems programmers and operations personnel must be concerned with."

The working set for a given program is the number of pages that are in use in a relatively short time. "The sum of the working sets of programs in concurrent execution determines the total amount of real core required . . . to maintain a reasonable level of performance," he wrote.

Memory alignment "can be considered the other side of the working set coin," Howard added. If the allotment of memory is significantly smaller than a program's working set, the number of page faults will increase and performance will degrade.

"Most users have found that a ratio [of virtual to real storage] of approximately four to one is about the limit for good performance," the article said in one place, though later it noted "most users seem to have settled on a ratio of about two or three to one."

The average user will not want to get involved with the paging mechanism logic, but it is important that he understand what is going on, Howard commented with reference to the replacement algorithm.

The programmer, on the other hand, must be aware of his environment. Despite dreams to the contrary, research by a pair of IBMers in 1968 showed "the programmer must be concerned with how memory is used, rather than how much memory is used," Howard added.

"[The programmer] is no longer concerned with minimizing the total size of his program, but something more subtle, the working set . . . . An inefficient program can simultaneously waste CPU time, core space and channel time all because of excessive paging."

Having perhaps scared the wits out of some of his readers with such broadbrush pictures of the dangers, Howard followed with a five-part checklist of what can or should be done in the areas of program design, procedural coding, data allocation and assignment, input/output and subroutines.

Turning to operational concerns, he remarked that the improved memory management capabilities of VS systems have effectively eliminated many system loading and scheduling problems. However, he added, there are "a number of things" operators and system programming personnel "must keep in mind relative to overall system performance."

Selection of the proper virtual to real ratio is "primarily dependent on the type of workload."

Operators should avoid overscheduling the system, Howard warned, and "just as with non-VS systems, it is still necessary to optimize the allocation of space on direct access devices."

EDP Performance Review is available on annual subscription for $36, but single copies can be ordered from Howard at Applied Computer Research, Suite 298, 8808 North Central Ave., 85020.

Package 'Faces' Up to Fortran Debugging, Evaluation on 1100

ATHENS, Ga. – Analyzing and debugging Fortran programs can be made easier on Univac 1100 series CPUs with the Fortran Automatic Code Evaluation System (Faces) now available from Cosmic.

Faces analyzes the source code of the program being studied and can work with simple, single module routines or with programs made up of many subroutines and functions. Extensions to the system can be made to include dynamic traces and runtime analyzers, Cosmic noted.

The system has two main parts: a front end that gathers information about the target program and a set of routines which evaluates the information and generates warning messages about actual or potential errors.

The front end scans and parses the Fortran input. A graph structure is formed for each routine analyzed, and information is gathered about the interface between routines. Finally, the information is stored in a set of tables.

The diagnostic portion of Faces is made up of four separate routines which can be user-selected at the time of the evaluation session.

One of the diagnostic tests is geared to verification of correct parameter alignment between the user's routines, while another attempts to verify Common block alignments.

The other two test areas focus on analysis of variable initialization and a trace of the history and future of specified variables.

Written in Fortran V, Faces includes "approximately 7,235" card images, Cosmic said. Catalogued by the clearinghouse as program number MFS-22910, Faces is available for $600.

Documentation costs another $16.50, a spokesman added from the Cosmic office at 112 Barrow Hall, here in Athens, 30601.

Guides Outline CICS, IMS Keys

HACKENSACK, N.J. – Programmers and analysts working with CICS or IMS can avoid wading through IBM manuals – and still have detailed information at hand – with their choice of two new reference books now offered by On-Line Software International (OSI).

Each of the pocket-sized guides applies to both the standard and the VS versions of the system it covers. The VS portion of the CICS card includes, for instance, complete macro instruction formats with optional keyword openands.

It shows the task control area (TCA) field name and its hex displacement for each operand, including the Journal Control and extended Basic Mapping Support macros, TCA area, dispatch control area and the page allocation map.

A listing of all four-character transaction dump codes and their meanings is also there.

The IMS reference guide contains the definitions of system macro instruction and status codes. Rules for using the GET, INSERT and DELETE/REPLACE calls, as well as the corresponding status codes and definitions are also included, OSI noted.

JCL for the various IMS data sets is presented along with Data Language One data base calls and – again – their status codes and definitions.

Data base design macro instruction formats with options, keywords and device choices are shown for the various access methods.

Other categories include the general rules used in IMS data base physical design, segment formats, summary of pointer combinations, segment search arguments and an itemized summary of the major user and system Abend codes.

Currently, OSI is willing to distribute one reference card per installation free of charge. After that, a charge of $1/card will be "assessed" for each additional copy requested, OSI said.

OSI is at 411 Hackensack Ave., 07601.

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DDA Goes On-Line Through IMS

HUNTSVILLE, Ala. – Large-scale commercial banks with IMS/360-370 can handle demand deposit accounting (DDA) work, including on-line file maintenance and inquiry, report generation and linkage to a central information file and to the bank's general ledger, with a package from General Computer Services, Inc. (GCS).

Developed by the Bank of Delaware, the package supports inquiry responses through both audio and video terminals. The file maintenance, run through the terminals, eliminates almost all keypunching of such items as new account data, nondollar corrections and stop and hold orders, the vendor said.

While maintenance work can be keyed to individual accounts, the GCS package also includes a global edit capability for handling the same change in a number of records. This would be especially useful, a spokesman suggested, when accounts have to be reassigned to a new account manager or to the control of a new branch of the bank.

The criteria for the global changes may be a specific value in a given field, a range of values or a "floor" or "ceiling" beyond which the modification should not be made.

The report generator feature also takes advantage of the IMS facility for working with data fields – rather than whole records – by name. The parameter-driven system generates either one-time or regular production reports, and the output can be displayed on a CRT, run out on a hard-copy printer or produced on film through a computer-output-microfilm (COM) unit.

The central information file is essentially a name and address file with indicators that point to customer records within individual application files. As currently structured, it does not even contain summary information about the accounts, GCS said.

Linkage to general ledger includes internal generation and subsequent posting of general ledger transactions whenever an entry to the DDA operation requires a change in the bank's ledgers.

Profit and loss analysis and account analysis funds usage reports are among the management outputs produced by the system, which runs easily within the 350K typically required for IMS usage, according to GCS.

The IMS DDA package is currently available for $50,000 from the vendor at Huntsville Industrial Center, 1332 Meridian St., N.E., 35801.

Question for an EDP Manager: Does your boss know what you're doing?

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INFO 74 offers 58 sessions for corporate managers, including 14 executive sessions; and 19 sessions for EDP managers. Corporate management sessions will cover systems applications in the following fields (the number of sessions in each field is indicated in parentheses): Manufacturing (11), Retailing (12), Banking (9), Hospitals (3), Insurance (7), Government (7), Service Organizations (4), Administrative Services (7), Financial (7), Marketing/Sales (7), Personnel (4). EDP managers are urged to attend corporate management sessions so that they will better understand the corporate executive's problems with information systems.

EDP topics to be presented are:
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Acquiring a Data-Base Management System.
Advanced Computer Techniques for Developing and Maintaining Business Data Processing Applications.
Managing the EDP Professional—Guidelines for EDP Managers.
Future Considerations for Configuration Planning.
Virtual Storage for the User.
Advances in Data Communications.
The Management of Computer Programming Projects.
Data Base Management: Concepts, Benefits, Costs, Methodology.
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User Planning Cuts T/S Costs

NEW YORK – Users of the First Data Corp. remote computing network in this area now have a chance to cut their costs by 50% to 65% without massive rewrites, if the programs they have on the net meet certain limitations.

There is no change in the basic hardware used under the new First Data service. Clockwork is implemented on a Decsystem-10, and the user can work with all the major – and some minor – programming languages, as well as statistical, engineering and business application packages in the First Data library.

The user also has the flexibility of multimode operations, including the means of dynamically shifting between conventional interactive time-sharing and remote batch, First Data said.

The billing is simplified, and often reduced sharply, under this plan because First Data charges a flat fee of $10/hr plus a mass storage fee. No charges are made for CPU time or I/O usage, network spokesmen stressed.

The limitations imposed on the user to gain this service are "no real limitations at all" for many users, First Data argued. The basic parameter is that programs under Clockwork cannot exceed 24K words, or 120K bytes, of main storage.

And programs covered by this flat rate scheme must be capable of running without any on-line operator support or on-call special peripheral service. Output to tapes, plotter or printer will be completed off-line.

Companies that will find Clockwork most attractive, a network source thought, are those that can plan their time-sharing needs in advance.

Cost of the new service "should be very close to whatever current users are now paying, minus the CPU and I/O charges," the spokesman said.

Clockwork is being managed by the New York office of First Data, 254 W. 31st St., 10001.

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NEW YORK – Medium-sized manufacturing companies can exercise good control over purchases with a new software package developed by Decision Concepts, Inc. (DCI).

Beyond conventional record-keeping, DCI's purchasing control system generates critical information and action reports on a regular basis. Buyers, for example, receive a weekly materials status report which summarizes all outstanding orders by part number.

One or more times a week, however, the system produces an extract of the full status report, detailing all late orders, orders expected that week and orders expected the next week. This output, coupled with the buyer's judgment, shows what follow-up action is needed, DCI noted.

The system also produces two more action reports periodically. A vendor summary shows by part number each item a vendor supplies, information such as quantities (this-year-to-date), this-year-projected, and last year), and comparisons on cost and rejection rates.

Selection Support

The part number summary shows essentially the same information but gives details on all vendors for each part number. This can be "extremely useful" in vendor selection for upcoming orders, DCI said.

On a regular basis, the system also produces reports that flag any lags between requisition and purchase orders. Still another report shows materials status by part number, including history, inventory, on-order, consumption and last price.

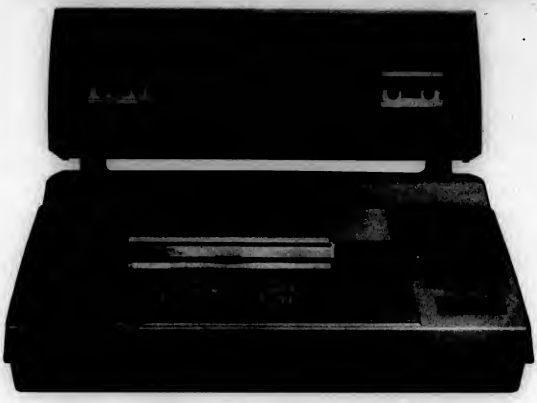
A printout for the accounting department shows, in summary, expected accounts payable by due date.

The system also has the capability of printing purchase orders and it may be integrated directly in accounts payable, requirements planning and inventory control applications.

Written in ANS Cobol for use under DOS/360-370, the largest module of the system requires a 64K partition. The software has been used in a DOS/VS environment as well as under "real" DOS, the vendor said.

The purchasing control system costs about $15,000 with additional charges for any modifications that require more than 40 hours of systems time by DCI personnel. DCI is at 280 Park Avenue, 10017.

"Silent 700" ASR data terminals



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Truth Table Provides Order

Nested IFs, Gaining Acceptability, Can Be Debugged

By J. Dennis Omlor
Special to Computerworld

Dating back to my days at IBM, well-informed data processing people (management and programmers) urged the avoidance of nested IFs. One of the reasons given for steering clear of this dreaded tool was that maintenance programmers had a difficult time reading and interpreting nested IFs.

Concepts and Techniques

Currently, it seems that structured programming advocates are saying that nested IFs aren't really so bad. I think most of us are going to have to start applying structured programming techniques.

So I've devised a method whereby I can debug nested IFs and I haven't seen anything comparable in any textbook or manual. My method looks strangely like a truth table; I call it an order-of-execution truth table.

The basic syntax of the IF statement resembles the following: IF condition THEN any imperative statement(s) ELSE any imperative-statement(s).

To the novice, an IF is not an imperative statement, but actually it is. So the "expanded" version can look like the following:

IF c_1 THEN t_1 IF $_2c_2$ THEN t_2 ELSE e_2 ELSE e_1, where ci represents conditions, and ti and ei represent the possibility of executable instructions.

To build my table, I counted the number of IFs, which is also the number of conditions (compound conditions treated as one condition). As in truth tables for compound conditions, if there are n conditions, there are 2_n rows in the order-of-execution truth table.

The first n columns contain all combinations of Ts and Fs, written in some orderly fashion. The next m columns contain the statements or codes for statements in the order of their execution.

Next, I numbered the IFs from left to right with a "subscript" notation.

The ELSEs should also be numbered, but not in the same manner. They are dependent upon the IFs; there can't be more ELSEs than IFs, but there can be fewer.

The ELSE "subscript" corresponds to the previous unpaired IF in a manner similar to pairing right parentheses with left parentheses in other Cobol statements.

In the event there are more IFs, then their corresponding ELSEs are implied at the period where the nested IF sentence ends. The previous nested IF has been properly annotated, and the table can be illustrated as follows:

Order Executed

c_1	c_2	1st	2nd	3rd	4th	5th
F	F	IF_1	NS			
F	T	IF_1	e_1	NS		
T	F	IF_1	t_1	IF_2	e_2	NS
T	T	IF_1	t_1	IF_2	t_2	NS

Here NS means next sentence unless, of course, e_1 or t_1 refers to a GO TO. Each ti and ei represent zero or more statements other than IFs. Only ei, ti, IF_1 and NS are entered in the table.

The first operation executed is IF_1 and can be entered in the table. After familiarization of this method, realize that IF_1 needn't be entered; it's obviously done first. Other IFs may be eliminated, thereby compacting the table.

Now examine the c_1 column. When c_1 is true, the next operations executed are t_1 and IF_2. When c_1 is false, e_1 is executed next. These can be entered in the table in the appropriate boxes.

Now we can iterate, examining each IF_1 c_i; when it's true, t_i is executed next and when it's false e_i is executed next. Either t_i or e_i may have another IF_{1+1} which must be examined further. While we are examining, the symbols IF, e, t and NS can be entered in the table.

Some lines of the table collapse rather quickly, particularly when there's no associated ELSE. For instance, when the first IF has no ELSE and the condition is false, processing goes to the next sentence.

Example:

IF $_1$ c_1 THEN t_1 IF $_2$ c_2 THEN t_2 ELSE e_2

c_1	c_2	1st	2nd	3rd	4th	5th
F	F	IF_1	NS			
F	T	IF_1	NS			
T	F	IF_1	t_1	IF_2	e_2	NS
T	T	IF_1	t_1	IF_2	t_2	NS

One can see how some of these things can be done with compound conditions (ANDs, ORs and NOTs .)

I think an example with Cobol statements might be in order.

IF_1 A=B MOVE . . . IF_2 A > C ADD . . ELSE$_2$ SUBTRACT . . . ELSE$_1$ WRITE . . .

A=B	AC	1st	2nd	3rd	4th	5th
F	F	IF_1	WRITE	NS		
F	T	IF_1	WRITE	NS		
T	F	IF_1	MOVE	IF_2	SUBTRACT	NS
T	T	IF_1	MOVE	IF_2	ADD	NS

One important thing to remember is that each time an IF is executed, the truth table portion must be interrogated to determine what is done next.

I've attempted to explain this method utilizing Cobol. However, Algol and PL/I users may use a technique similar to this since both languages permit nested IFs.

J. Dennis Omlor is an instructor in computer and information sciences at the James J. Nance College of Business Administration, Cleveland State Univerdy.

You're in EDP and you've got an information retrieval problem. You're considering moving some routines from paper to terminals. Or maybe you're already using terminals but you've got to enlarge your system.

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Electric Utilities Can Solve Problems with GA Minis

ANAHEIM, Calif. – Engineering computation and process control applications within the electrical utility field can be managed with two software packages now available with the SPC-16 family of minicomputers from General Automation (GA).

PTAC-16 is an interactive digital computer program for simulation of transient behavior in dynamic systems and processes. PSS/2-16, developed by GA in conjunction with Power Technologies, Inc., allows power system engineers to execute load flow analyses, dynamic simulation (stability) and short circuit studies in an interactive mode.

Each of the packages can be used as a stand-alone job under GA's DBOS-II or as a background function under RTOS-II, the company said from 1055 S. East St., 92805.

Through CRT Terminals

Clients to Access Firm's On-Line Files

By Ronald A. Frank
Of the CW Staff

ZUTPHEN, Holland – It is not unusual for a wholesale supplier to utilize a teleprocessing network to perform order entry inventory control. But a supplier that decides to give his customers on-line access to selected parts of his data base is unique.

Reesink N.V. supplies everything from steel beams to farm equipment to its 20,000 Dutch customers. The firm handles about 1,500 orders each day using a network of IBM 3270 terminals installed at company offices.

Currently, customers call in their orders and a CRT operator at a Reesink site can access the price list and inventory in stock files to give the customer product information by phone. But late this year Reesink will begin to allow CRT access by customers directly into these data files.

"There is some risk in this new method," acknowledged Adrianus Reesink, one of the DP directors of the company can "block" an access from a customer if the need arises, he said.

Reesink was founded in 1786 as a blacksmith shop and the DP director that bears the family name is actually a sixth generation descendant. But the long life of the company has not made it backward when it comes to using computers. The firm got its first punched card equipment in 1953 and in 1964 it installed an IBM 1401. Later it upgraded through several models of the 360 Series and today it has a 370/135 which was installed in 1972.

While Reesink is an all-IBM site, this has certainly not limited the company's ability to change and upgrade. As director, Reesink estimated he averages at least one change to the configuration every six months. His current plans call for replacing the present 2319 disk subsystem with 3340 data modules in October.

At the same time, he will install a 3705 front end and add 10 3275 CRTs on dial-up lines which will be used for customer access. He is waiting for "a low-cost version" of the 3270 and in the meantime he may try the IBM 3604 banking terminal to see if it fits into his teleprocessing system.

Reesink started with teleprocessing four years ago and today he maintains dual CICS systems on the 135. The major system controls the terminal operation while the backup is used with one CRT and a printer for software development.

Reesink will soon use the backup CICS to test a new version of DOS/VS and if he is satisfied, he will incorporate it into his full system. The DOS/VS system is no stranger to Reesink since the firm served as a Beta test site for the operating system. The switch from DOS to the virtual version was more efficient by about 20%, he estimated.

One of the few in-house software routines is the TP restart routine which gets the system back on the air in 10 minutes, Reesink said proudly. He is currently considerating the operation of CICS under Vtam instead of the present Btam, and he might even try SDLC as soon as he can get more information.

The 40 3270s now operate on four-wire private lines provided by IBM for the Dutch PTT. The terminals transmit data at 2,400- and 4,800 bit/sec with good line reliability, he said. The turnaround time from a Reesink office in Rotterdam or S'Hertogenbosch is usually between one and two seconds, he said.

CW Photos by Ronald A. Frank

CRT operator at Reesink N.V. uses display in DP center for software development work.

Adrianus Reesink, technical director, checks a CRT application on an IBM 3270 display.

AT&T Seeks Restrictions on Satellite Connections

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – AT&T has filed proposed regulations with the Federal Communications Commission (FCC) which would severely restrict the ability of satellite users to interconnect with terrestrial facilities provided by the phone company.

Although it cites technical problems which can arise as a result of satellite usage, the AT&T proposal is similar to the restrictions it sought to impose on the specialized common carriers last year.

Specifically, AT&T told the commission it would not allow a satellite private-line circuit to be used in conjunction with the switching capabilities of a PBX or to automatically connect with another private-line circuit which terminates at the PBX. In the case of FX connections, interconnection would be allowed only for outward service. The AT&T plan would also limit CCSA links to high usage trunks and would prohibit connection to the Bell dial-up network.

The domestic satellite carriers directly affected include Western Union, which recently inaugurated its Westar service, and American Satellite Corp., which is also beginning service to users.

Western Union currently has nine Westar circuits for six users in operation. In some cases, these customers are connected to telephone company lines and they would be immediately affected if the AT&T proposal, which was scheduled to take effect at the end of August, is approved.

In view of the far-reaching implications of the AT&T satellite restrictions, it is probable that the FCC will at the very least postpone the effective date pending further study. Thus far, Western Union, American Satellite and RCA have objected and it is believed the FCC staff will also formally object to the plan.

Part of AT&T's justification for the satellite restrictions is based on recommendations made by the CCITT, an international communications standards body which has cautioned carriers against the dangers of circuits configured using two satellites of dual hop systems. According to AT&T, messages sent on such dual hops will be degraded in quality because of the increased propagation delay.

Western Union disagreed with this position and said it would easily demonstrate that the use of Westar satellite circuits would not degrade the service quality provided to the customer. Western Union took exception to the AT&T proposal concerning the technical dual hop problems, adding that Bell had failed to raise this issue during previous domestic satellite proceedings conducted by the FCC.

Both WU and American Satellite told the commission that AT&T had decided to raise the technical questions only after domestic service had begun. American Satellite said its ability to serve users would be severely restricted if the AT&T proposal is approved by the commission.

A WU spokesman said, "The AT&T restrictions would deny users the cost-saving benefits of satellite communications, presumably until AT&T launches its own satellite in 1976."

Meanwhile, the FCC has ordered AT&T to interconnect with other satellite carriers on a reasonable nondiscriminatory basis.

TP Monitor Adds Tape Support

VILLANOVA, Pa. – The University Computer Activity of Villanova University has announced a version of its batch-oriented RMTDOS teleprocessing monitor that has tape and procedure library support.

Running in a DOS or DOS/VS partition, RMTDOS-II provides the same facilities as IBM's Hasp RTP program, a spokesman said. The package controls transmission from IBM computers in the 360/22 to 370/158 range to computers running under Hasp, he said.

The monitor itself requires a minimum of 8K, the spokesman noted. The program is available in source form on either cards or tape.

There is a one-time charge of $4,000 for 10 years' use. The price for educational institutions is $400 from the university.

Datarote Boosts Roster

OTTAWA, Ont. – The Trans-Canada Telephone System (TCTS) has added five Canadian cities to the Datarote network.

The addition of Saskatoon, Kingston, Sudbury, Sarnia and Windsor brings to 24 the number of cities served by the Datarote since it was introduced in April 1973 by the TCTS Computer Communications Group.

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Distrubuted Processing Network Reserves Rooms at the Inn

Reservations can be confirmed instantly on Info 2001 terminal.

PHOENIX – Ramada Inns has turned to distributed processing for its 1,000-terminal nationwide hotel reservations net.

Ramada had previously used the American Express Space Bank system to handle its nationwide reservations, but when that contract was running out, "it (became) very obvious that rates were going up," said Jan Wlodarkiewicz, systems manager for Ramada Inns.

Called the Info 2001, Ramada's system currently includes about 550 Texas Instruments (TI) terminals in motels throughout North America.

Each customized terminal, a TI Model 990, consist of a 4K-word processor, 960-character CRT, Facit-Addo printer, 1,200 bit/sec modem and an autodial unit.

Hotel desk clerks and managers use the terminals to inquire about room availability and to make reservations in other company inns. The reservations are output on the terminal printer.

Launched in July, the system is now handling 30,000 to 40,000 transactions daily.

Hotel managers can notify the central computer system here to open or close their hotels for further reservations and to specify what types of rooms they have available.

The terminals themselves control the man-machine interface, Wlodarkiewicz noted. The operator calls up formats held in the system's core memory, and the processor then edits the data as it is entered.

Doesn't Really Need Terminals

The room reservations application does not really require a programmable intelligent terminal, Wlodarkiewicz noted, but Ramada wanted the capability to use the same terminal systems for future "property management" use in the motels, including guest billing and some accounting, he stated.

He mentioned that Ramada had considered using more than one concentrator in its net but found that data compression in the terminals, plus the average volume and distributional qualities of the net, made one concentrator the logical choice.

Data is transmitted through the terminals' built-in Universal Data Systems modem over dial-up lines to a TI 980A concentrator in Omaha, Neb.

Also in Omaha, operators at 70 Courier Executerm 250 terminals take calls from motels without their own terminals and enter those messages into the computer system.

The concentrator sends a 4,800 bit/sec data stream through Paradyne modems to a Digital Equipment Corp. (DEC) DC-75 front end here.

The mainframe is a dual-processor Decsystem-10 with four modules of memory, 12 disk drives and four tape stations.

Response times in the inns are in the 20- to 40-second range, Wlodarkiewicz said. The length of these times is primarily due to the dial-up approach, but is acceptable with the amount of use the terminals receive, he explained.

In most areas of the country, Wlodarkiewicz stated, the terminals automatically call up the Ramada computer center to receive incoming messages. The system also "piggybacks" such messages onto its response when a particular motel calls up the system.

Ramada considered using dedicated lines for the terminals, Wlodarkiewicz said. Although this would have meant faster response times, it would have been much too expensive, he commented.

The terminal modems, however, can be switched to synchronous transmission over dedicated lines.

Currently there are eight incoming Wats lines to the concentrator center and three outgoing Wats lines.

Other than the reservations system, the Ramada computer center handles corporate accounting applications and on-line program development work.

IBM, Univac, HIS and Burroughs all bid to equip the center, Wlodarkiewicz said, but DEC's price was notably lower.

Hardware for the entire Ramada system cost about $7 million, with the terminals costing about $4,000 each, Wlodarkiewicz concluded.

Untouched by Human Hands?

A report on Computers in Manufacturing in the September 25th issue of *Computerworld*.

This Special Report will look at two different aspects of computers in manufacturing: Management Information Systems and computer-managed manufacturing. We'll be covering topics like these:

- Advantages of MIS to a manufacturing firm
- The implementation of an MIS–case study of user experiences
- Trends in computer-managed manufacturing, how will it affect business side of data processing?
- Worker satisfaction and the automated factory
- Computers and "smart" production machines
- Materials Requirements Planning–what it is and what it can do

If you're involved in this area, be sure to read this report. And if you're a marketer to this field, don't miss our September 6th ad closing. For more details, see your *Computerworld* salesman or call Judy Milford at (617) 965-5800.

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T-Comm Supports Terminet

BOHEMIA, N.Y. – Periphonics Corp. has brought out a software module that allows their T-Comm 7 front-end processor to support the full range of GE's Terminet line, according to Periphonics.

The module permits communication between Terminet terminals and the front end in 7-level Aacii plus character parity.

Transmission rates on the terminal are switch-selectable between 110, 150 or 300 bit/sec.

The T-Comm 7 front end can interface IBM 360/370s or the Burroughs 3500 series. It offers up to 93 lines in standard form.

The Terminet support module is furnished on cards with the source code included, the spokesman said. The module costs $120/mo on a three-year lease, with delivery in two weeks from the firm at 75 Orville Drive, 11716.

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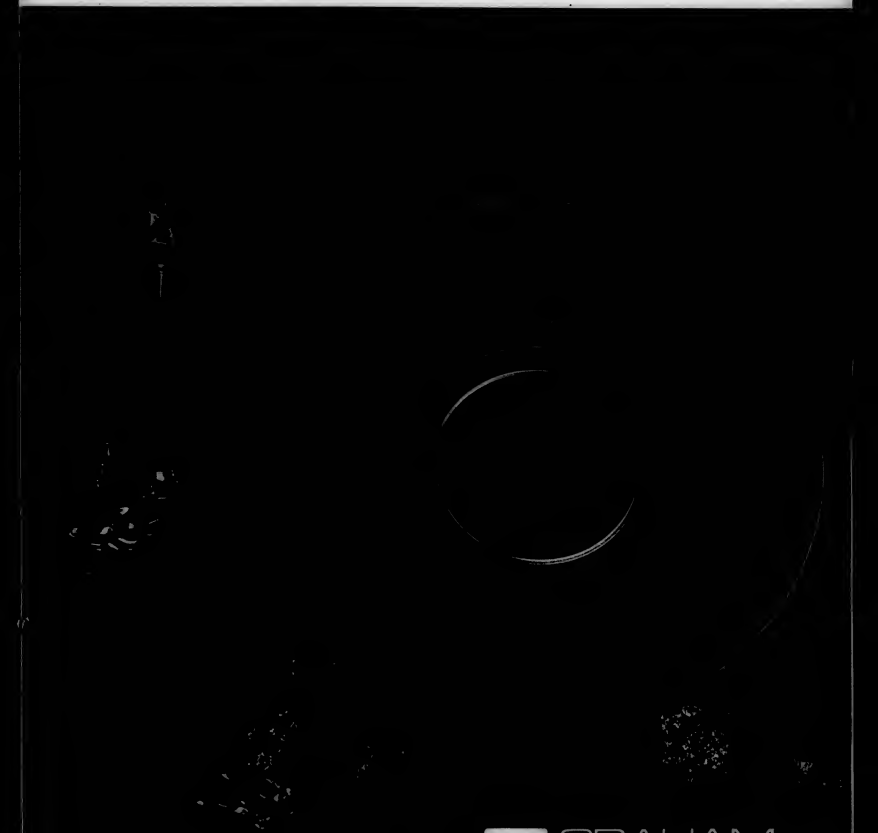

GRAHAM MAGNETICS

GTE 'Aries' Software Helps User Choose High/Low Rate Structure

MT. LAUREL, N.J. – Users responsible for dealing with AT&T's "hi-lo" tariff can now access Aries and other GTE Information Systems Network design programs on the Scientific Time-Sharing Co. net.

GTE developed the programs and has already used them to reduce its own domestic line costs, the firm said. GTE will continue to maintain the software and will provide consulting service to users.

Effects of Change

Aries will aid the user in selecting the best high/low rate structure and will also help in evaluating the effect of the rate change on the customer's present network configuration, a GTE spokesman said.

Written in APL, Aries contains complete data files on high and low density cities, international border crossing points and special information for government communications users.

The nationwide Scientific Time-Sharing net supports Ascii terminals from 15 char./sec and up, the spokesman said. CPU charge is $1.10 per CPU/sec, and the connect charge is either $24/hr or $30/hr depending on the speed of the terminal.

Training Fees

GTE charges $500 for a one-day training course on Aries and the other network design software. There is a $300 charge for each additional day, and rates for a facilities management approach are negotiable.

A user who does not take the training course has to pay GTE a $50 materials charge, including updates.

Further information is available from Ron Wolfson at GTE here.

Multiplexer Brings Honors to Trio

SILVER SPRING, Md. – The National Aeronautics and Space Administration (Nasa) has honored three Johns Hopkins engineers who have developed a multiplexer allowing transmission of burst-type and other variable speed rate data along a single channel.

The three engineers are A. George Carlton, who heads the university's Applied Physics Laboratory's space communication program, and Robert L. Appel and C. Thompson Pardoe, members of the space communications group.

The time-division multiplexing system was developed in response to a Goddard Space Flight Center requirement to multiplex three high-speed asynchronous telemetry bit streams in a single channel.

The multiplexing is achieved by interleaving blocks of data from each source. Each block is preceded by a short, coded bit pattern specifying the source of that particular block of data.

Data blocks are transmitted as they become available from each particular source and, therefore, synchronism of the I/O rates is not required.

The prototype system can accommodate input rates as high as 461-kbits/sec on a single input channel and output rates as high as 953 kbit/sec, according to the laboratory.

The Applied Physics Laboratory is at 20910 Georgia Ave.

Adapter Board Links TEC Terminal

TUCSON, Ariz. – TEC, Inc. has announced printer interfaces for the company's line of Data-Screen terminals.

The hard-copy adapter boards can be ordered with the terminals or field-installed, the company stated.

Series 400 Data-Screen terminals require TEC's hard-copy adapter (HCA 930221) which provides RS-232-, TTL- and 20mA current loop interface. It operates with all Series 400 terminals except models 430, 435, 436 and 440.

Data transfer from terminal to printer is crystal-controlled and speed ranges from 110- to 4,800 bit/sec. Data format is 11-bit Ascii, serial asynchronous.

Mini-Tec Data-Screen terminals can be printer interfaced with either parallel or serial hard-copy adapter printed circuit boards, which are also provided with switch-selectable interface and control options. Transfer rates from 110- to 9,600 bit/sec are switch-selectable.

The parallel adapter (HCA 980061) with TTL drivers is compatible with most printers using a ready/strobe-type interface. The serial adapter (HCA 980060) offers RS-232C-, TTL- or current loop interfacing, TEC stated.

The HCA 930221 adapter costs $270, the parallel HCA 980061 adaptor costs $150 and the serial HCA 980060 adapter costs $240. Delivery is 60 to 90 days from the firm at 9800 North Oracle Road, 85704.

Have you increased the productivity of your machine tools with Numerical Control but overlooked the costs of manual programming? LeBlond computer assist programming can give you the other half of NC productivity. It will not only reduce your cost per tape; it will reduce errors, keep your NC machines busy making chips, and enable you to easily improve your programs to optimize machine productivity. Because customer conditions vary, we offer our computer assist programming through a variety of methods:

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Communications Added To Merlin Turnkey Unit

MOUNTAIN VIEW, Calif. – Gruber Associates has added data communications capability to its Merlin 6000 turnkey system.

The Merlin 6000 system, primarily used for inventory control applications, includes a processor controlling up to eight hand-held terminals.

The terminals can be used interactively with the processor for data collection, and retrieval, the firm stated, and the Merlin 6000 can either produce reports on the input or collect it for asynchronous transmission over phone lines to another mainframe.

A stand-alone Merlin 6000 with one hand-held terminal costs $27,500; additional terminals cost $500 each. The Ascii interface and modem cost $3,000. Delivery is 60 days from the firm which can be reached at P.O. Box 1088, 94042.

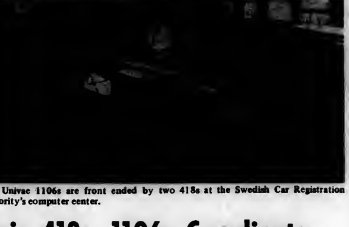
Omnitec Redesigns Coupler

PHOENIX – Omnitec has introduced one acoustic coupler model and revised another.

The Model 501A is designed to interface with any standard Model 33 teletypewriter. The revised Model 701B offers 40 char./sec speed capability, high sensitivity, acoustic or hardwire (DAA) coupling, simultaneous TTY and RS232 output and half- and full-duplex operation.

The Model 501A costs $164 and the Model 701B costs $341 with delivery from the firm at 2405 S. 20th St., 85034.

SYSTEMS&PERIPHERALS



Two Univac 1106s are front ended by two 418s at the Swedish Car Registration Authority's computer center.

Twin 418s, 1106s Coordinate Swedish Automobile Data Base

OREBRO, Sweden – This country recently completed the first year of operation of a centralized national vehicle registration system.

The new system incorporates not only registrations, but data pertaining to inspections, insurance, vehicle tax payments and drivers' license records in one central bureau.

Prior to the new system, vehicle registrations were administered by each of the 24 Swedish counties using manual card index systems. The counties issued a plate number for each vehicle, and it was up to the owner to have two plates made.

The heart of the new system consists of two Univac 1106 computers each with a capacity of 131K words of main memory, front ended with two Univac 418-II computers each with 24K words of memory.

These 418s facilitate handling of the heavy volume of communications flowing into the 1106.

The peripheral equipment on the combined systems includes 12 Fastrand III drums providing a storage facility of 2.4M char., eight Uniservo 16 and two Uniservo 12 tape drives, eight 8414 disk drives and an 0782 and 1004 printer.

Numbered for Life

Under the new system, the license plates are issued by the Swedish Car Registration Authority. The same license number stays with the car through any ownership changes – literally until the car is scrapped.

"Although efficiency of operation was the main consideration, our studies indicated that a computer-based system would not cost any more to operate than a manual system, and would probably be more economical because of the efficiences inherent in one large centralized system rather than several small ones," according to Stig Swanstein, chairman of the study committee of the Car Registration Authority.

The entire system is duplicated for security purposes so if one of the computers should fail, operations can proceed on the other processor. The duplication extends to the electric power which is backed up with diesel generators.

Linked to the central computer by telephone lines are 240 CRT terminals and about 400 teletypewriter terminals. The visual displays are located in county offices, while the teletypewriter terminals are situated in police stations throughout Sweden.

The initial major task for the authority was to transfer the information from the

(Continued on Page 24)

In Benchmark Run

370/155 Throughput Faster With Fabri-Tek Accelerator

By a CW Staff Writer

MINNEAPOLIS – Fabri-Tek's Accelerated Storage Adapter (ASA) for the IBM 370/155 is said to give 155 users performance equivalent to a 370/158.

IBM is currently evaluating the attachment for maintenance purposes; the ASA attaches to the IBM storage adapter, but Fabri-Tek claimed the attachment is transparent for IBM diagnostics.

The ASA, in combination with Fabri-Tek/Data Recall memory, allows a 370/155 CPU to execute instructions considerably faster than the standard 155 with IBM memory, resulting in increased throughput, Fabri-Tek said. This is because the Fabri-Tek/Data Recall memory's access time is said to be over 50% faster than IBM's, with a read/write cycle time approximately 40% faster than IBM's.

"On actual benchmark tests, running 1MS remote terminal jobs on a 2M-byte 370/155, the average transaction time decreased by 20% and the CPU active time, as measured by a hardware monitor, decreased by 23.9%," the firm claimed.

"Decreases in CPU active times of 15.8% were achieved while running batch jobs," the firm continued. The benchmark jobs were first run on the CPU without the ASA. The files were then restored and rerun after the ASA was installed.

The CPU percent active time, a measure of CPU utilization and reserve computer power, was recorded for three weeks of operation prior to installation of the ASA. The results obtained after the ASA was installed showed an 18% decrease in CPU percent active time over a two-week period. The CPU percent active time averaged 67.4% prior to the ASA, according to Fabri-Tek.

The firm cautioned, however, that the percent improvement will vary depending on the utilization of the CPU, but the results from this installation place the improvement in the middle of what IBM claims for the 370/158.

The benchmarked site was all Fabri-Tek/Data Recall memory. However, the ASA is attachable to any 155 system in combination with IBM 3360 memory, the firm said. This capability enables the 155 user to add memory with the ASA to improve his system's performance without disposing of his 3360. However, the 3360s will run at their original speed, according to Fabri-Tek.

The ASA in combination with Fabri-Tek/Data Recall CPU model upgrades allows a full range of sizes up to 4M bytes.

The ASA is priced at $76,000 with memory priced separately. The firm is at 5902 S. County Road 18, 55436.

Datapoint Adds Disk, Diskette, Tape Peripherals

By Vic Farmer
Of the CW Staff

SAN ANTONIO, Texas – Datapoint has added an 11-high disk pack drive, 9-channel 1,600 bit/in. tape drive, and diskette drive to its options for the Datapoint 2200 and 5500 minicomputers.

The 20M-char. disk drive uses a standard IBM 2314-compatible pack. The firm has structured the storage architecture along the same lines as its present cartridge disk.

The 11-high disk pack has 16 sector buffers with each sector randomly addressable by the software. This arrangement allows the user to upgrade with the only requirement being to tell the system there is more disk space available, according to the firm.

Two drives can be attached to a CPU and the average access time is 35 msec with a data transfer rate of 1.5M bit/sec.

The disk is fully buffered and the buffer is fully addressable. Because of this buffering, the firm maintains that most disk operations can be carried out in the buffer itself without transferring the needed data into the processor memory.

One disk and controller lease for $672/mo.

The 1,600 bit/in. tape drive has an integral 2K-char. buffer to allow the tape to be written or read asynchronously. This buffer is also completely addressable and any location can be as accessed or modified by the processor.

Use of this tape drive buffer permits records to be read or written in a slew mode, according to the firm. The tape drive leases for $371/mo.

The diskette drive, also attachable to the firm's 1100 Series, consists of a controller and up to four drives. Each drive contains over 256K characters and has an average latency time of 83 msec.

Software-formatted diskettes are interchangeable with IBM 3741-type diskettes. The drive has a 1K-char. addressable buffer.

This buffered approach on the diskette drive, according to Datapoint, allows software previously written for a larger Datapoint disk to be used on the diskette memory with few modifications.

The diskette drive leases for $110/mo from the firm at 9725 Datapoint Drive, 78284.

Forms Stacker Self-Powered

NIAGARA FALLS, N.Y. – A continuous forms stacker with extra capacity has been developed by Moore Business Forms. It is designed to be used in tandem with Moore's detacher or imprinter-detacher units which have conveyor delivery tapes.

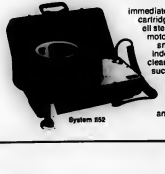
The new unit is self-powered and attaches to the output end of the related detachers. Detached forms are stacked in a vertical position to a maximum height of 15 in. (approximately 5,000 one-part forms).

When maximum stacking height is reached, the unit stops automatically for removal of the forms.

The stacker unit accommodates forms with depths of 2-5/6 in. to 17 in., and form widths from four in. to 19 in. Single- or multiple-part fastened sets are accepted.

The stacker is priced at $1,064 from the firm at 10001 Buffalo Ave., 14302.

Clean all cartridges or disc packs for only $950.



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Independent Disk Storage Adds Years to 360/65

BUFFALO, N.Y. – Textron's Bell Aerospace Division extended the usefulness of its IBM 360/65 at least two years by upgrading its disk storage with a software and plug-compatible, independent-supplied subsystem.

The newly interfaced disks, consisting of a four-spindle Memorex 3670 disk subsystem, replaced an eight-spindle IBM 2314 disk unit.

Memorex's 3670 line is equivalent to IBM's 3330 disks, originally designed for the System/370.

In addition to realizing a substantially greater return on investment from its purchased 360/65, Bell Aerospace garnered:

- A 2.8:1 improvement in rated average access time – 75 msec down to 27 msec.
- A 2.6:1 faster data transfer rate – 312 kbyte/sec up to 806 kbyte/sec.
- A 11% expansion in capacity – eight spindles of 233K bytes up to four spindles of 400K bytes, at a reduced cost/byte.

Microcode Simulation

The interface of the 3670 subsystem to the 360/65 required the optional Memorex 2860 selector channel attachment feature. A software microcode simulation, which provides 360 and 3670 compatibility by effectively changing the selector channel to operate as a block multiplexer channel, allows use of rotational positional sensing.

Rotational positional sensing allows the disk control unit and the data channel to disconnect during record search time. As a result, the CPU is free for other operations while a read/write head seeks a disk track record.

Software modification for the selector channel is Memorex-maintained within OS/360. Basically, this amounts to inserting Assembler code modifications within the input/output supervisor of the operating system.

Another feature, command retry, provides automatic error recovery without interruption to the host CPU. It is generated through both the software modification and as a function of hardware, using the 2860 selector channel attachment feature.

According to Ray Carroll, Bell Aerospace Director of data processing, "Memorex's front-end microprogrammed storage control unit was a major factor in selecting Memorex."

Microprogramming allows the 3670's storage control unit to receive, decode and interpret commands from Bell Aerospace's 360 by responding to the identical set of commands used in IBM programs to operate the 3330 storage facility.

An extensive library of diagnostic microprogram routines is recorded on the read-only floppy disk.

Both diagnostic and functional control programs require only 25% of the floppy disk's capacity, allowing future microprogram enhancement.

"In-line diagnostic checking was also an important plus," stated Carroll. "An individual drive may be rendered off-line to the system but on-line to the storage control unit for diagnostic checking without interrupting any other drives."

Other enhancements added concurrently with the disk subsystem include four rented IBM tape drives and a three-fold increase in core capacity purchased from Electronic Memories and Magnetics Corp.

Carroll's operation supports Bell Aerospace's headquarters plant near Buffalo and the company's engineering and manufacturing operations in Western New York and New Orleans. Approximately 40% of applications are engineering, the rest business-oriented.

'Dataway' Works Hospital Data

ST. LOUIS, Mo. – Dataway, an RCA-developed data management system for hospitals, connects to a hospital's private automatic branch exchange (PABX) telephone system to provide displayable information on bed availability, patient records, doctors present, housekeeping status and other information.

Interface Included

The basic Dataway consists of applications programming for a minicomputer, display consoles, journal printers and an interface to the PABX.

For a 150-bed hospital, the price of the system ranges from $25,000 to $30,000.

Provided as a turnkey system, Dataway is available through Stromberg-Carlson Communications, 10151 Corporate Square, 63132.

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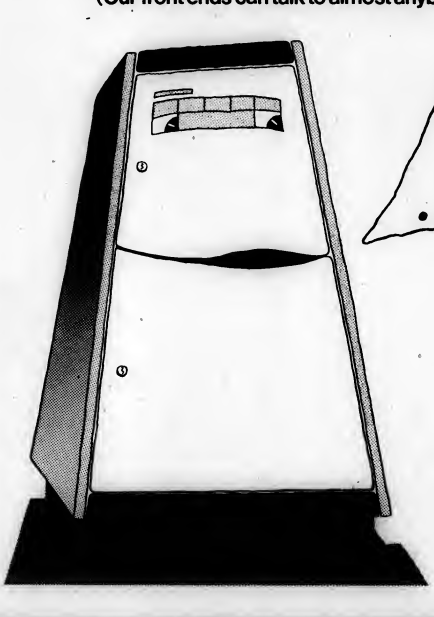

Increased Memory, Spooler

Enhanced 360/30 Takes On State's Growing Work

By Patrick Ward
Of the CW Staff

JEFFERSON, Mo. -- A DP shop faced with a sudden jump in its workload can enhance its computer system, upgrade to a new one or perhaps add a third shift.

A year ago, the Division of Management Systems in the Missouri State Office of Administration took the first approach.

The division had been using a 64K IBM 360/30 under DOS to do the state's payroll processing; financial accounting, including check writing for state disbursements; and a small amount of service work for other state agencies, according to Ted May, EDP coordinator.

But plans called for the division to add an expanded payroll/personnel system and other applications that would be beyond the scope of the division's computer, May noted.

Director Charles A. Shaffer appointed a task force consisting of the manager of computer operations, a systems programmer, an information systems coordinator, two systems analysts and the programming supervisor.

The task force recommended keeping the present CPU, primarily because it was already paid for, as was a card reader, console typewriter and two 2311 disk drives and controller.

This made enhancement more cost-effective than replacement with new hardware, May said.

The task force recommended increasing memory from 64K to 160K, going from three 2319 disk spindles to six and from two 3420 tape drives to four, May said.

Multiprogramming

The task force favored multiprogramming in two partitions and recommended a spooler to handle the output, furnish job accounting control and reports and supplement DOS in maximizing the hardware, May noted.

Two of the system's 2311 drives would be retained to act as spooling files for card and printer input and output.

The final recommendation was to add a second selector channel.

Computer Hardware Consultants and Services of Newtown, Pa., was chosen through competitive bidding to install 96K of add-on memory, May said.

IBM was selected to provide the additional peripherals and the second channel.

The division looked at several spoolers, including Grasp from Software Design, Inc., Power from IBM, Spooler from Boothe Computer Corp., Sprint from Jason Data Services and Asap from Universal Software, Inc.

Weighted Scale

Grasp came out first on a weighted scale matching the packages to the department's requirements, May explained.

Some major reasons for the selection of Grasp were its complete job accounting reports, plus such features as dynamic device allocation, partition balancing, program relocatability and automatic volume sensing, May said.

Grasp runs in a 22K partition and allows use of one card reader punch and printer to serve both partitions, he noted.

After 10 months operation, the enhanced mainframe's utilization, according to wall clock time, has risen 170%, with a 64% increase in monthly cost.

Current utilization is over 450 hour/mo compared with 180 hours in April 1973, May mentioned.

What About VS?

Informal comparison runs of eight representative jobs with a 224K 370/125 under VS showed that the elapsed time for the 125 was one hour and 39 minutes versus one hour and 57 minutes on the 30.

On a cost/performance basis, the 360/30 "performed substantially better," May said.

Multiprogramming which the added core and the spooler made possible, did not increase operator costs, May noted. Instead, it saved money, since a third shift with additional operators would otherwise have been required to handle the workload.

Compared with other hardware choices, enhancing the 360/30 meant annual savings of $30,000 over a leased 370/125 with 128K, $80,000 over a 370/135 with 192K and $70,000 over a 360/40, May concluded.

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One more point. Our 1236 costs no more than other twelve-high disks. You're already paying for BASF quality... you might as well have it. For more information on the 1236 or other BASF disk packs or cartridges, write to BASF Systems, Crosby Drive, Bedford, Mass. 01730.

When it's BASF...you know it's

not the disk that goofed.

Twin 418s, 1106s Coordinate Swedish Automobile Data Base

(Continued from Page 19)

manual card index records for each county into the computer's data base. This information was inputted into the system by operators using visual display terminals and took just over one year to complete.

By early 1973, all of the car registrations and drivers' license information was stored in the computer's files, and the first vehicle tax bills under the new system were sent out in 1973.

"We were afraid of some difficulties in the first year for the tax billing operation, but we actually received the payments more promptly than in previous years," Swanstein said.

Under the old system, police checks on car registrations were delayed by the need in many cases to search through antiquated handwritten manual certificates. On weekends when county offices were closed, the police had to obtain a key to gain access to the offices where the car records were kept, leading to substantial delays.

The inspection system is also in operation. An inspection form is sent to car owners by the car registration office reminding them to take their cars to any of the official inspection stations.

After the car has undergone inspection, the report is returned to the registration authorities so that the data can be entered into the system. Eventually, the inspection stations will have their own visual display terminals linked directly to the computers.

The insurance control system has had some difficulties, Swanstein noted, because of the problem of getting the various insurance companies to agree on a unified system.

When cars change ownership, the system automatically checks if insurance is carried. Before the new data system went into operation, it was estimated that between 100,000 and 200,000 cars on Swedish highways had no insurance and there was no easy way to detect their owners. The insurance companies can also have their own terminals tied in to the central computers.

The mailing of tax bills for vehicles is now spread throughout the year, relieving a burden on the tax office which formerly sent all bills between Feb. 1 and Feb. 10 of each year. Payments of the vehicle tax are made through the Swedish Post Office which prepares a magnetic tape record of payments received and sends it to the registration office.

In addition to the real-time inquiries processed, a great deal of operations in the batch mode are performed by the computer system each night starting at 6 p.m. These include updating of the files, new owner registration, new cars registered, change in technical information on the car, updating of insurance and inspection records and tax payment data.

As a by-product of the system, the Swedish Census Bureau now receives a magnetic tape from the registration office recording all transactions occurring each month.

The amount of information kept in the data base on the mass storage units is extensive. There are two primary divisions for the information – vehicle data and owner data.

In turn, each of the two major data bases has been subdivided into a large number of subfiles to make the most efficient use of main memory. Other reasons for the division were to expedite a rapid search, if needed, for any specific details and to give better protection for different files, Swanstein pointed out.

The primary file in the vehicle data base contains general information on each vehicle as well as the identity numbers of the present and last two owners. Another file is the model code file containing technical information such as manufacturer's name, model year, total weight, number of axles, doors, wheels, capacity of cylinders, size of tires, width, length, type of body, type of gears, horsepower, effective brake control and type of fuel consumed.

Technical data for those vehicles which are unique or which cannot be contained within the space in the model code file are kept in a vehicle overflow file. Another file known as a connecting file is concerned with data pertaining to trailers and pulling vehicles.

A guard file is also kept to retain information regarding unpaid taxes, stolen plates and cars, lack of insurance and any special inspection instructions, together with the name of the reporting agency.

Information on vehicles that have been scrapped is kept in chassis number file for five years in order to identify scrapped cars. This file also produces vehicle statistics since the records are grouped by make and model.

Swedish State Police check car registration data for an automobile on a national vehicle registration system which provides police with information on all vehicles within a few seconds.

Another file built into the owners' part of the car register file is a record of drivers' licenses held by Sweden's 3.5 million drivers. Previously, a driver's license was kept for a lifetime. Under the new system, a new license is issued every 10 years.

The records in the central system are now accessible on a 14-hour basis by the local authorities and police. Answers can be received from the system in response to a check in about three seconds.

Currently, the system is handling an estimated daily volume of 65,000 questions and 25,000 updatings – an average of two to three transaction/sec.

Let's take a look at the real cost of data entry

City Agencies Capitalize on System's Expandability

CARROLLTON, Texas – For this city, processing 5,000 monthly water and sewer department bills used to be an eight-hour, five-day-a-week job using a mechanical posting machine.

Now, with more than 7,000 accounts on the books, city employees complete the billing in three hours a day on a small computer, with time to spare for payroll, accounts payable, real estate tax and budgeting applications.

"We knew when our utility billings reached 5,000 accounts, we would not be able to cope with the volume manually," city manager Clonis Luallen explained.

Assuming the city could not afford an in-house computer, Luallen and his staff investigated the possibility of using a service bureau.

"The more we looked, the more we realized we wanted to keep our utility billing and accounting under our own roof," Luallen related.

After investigating six hardware proposals, Carrollton selected s Singer System Ten.

"It was within the city's budget and offered the best features, especially ease of expanding to keep pace with Carrollton's growing population and required services," Luallen explained.

The original computer configuration, valued at $1,200 monthly on lease ($45,000 purchase equivalent), consisted of:

- A CPU with 2K characters of internal memory for supervising the system and performing all necessary calculations.
- One Model 70 workstation – a typewriter-like device used for communication between operators and computer programs and as a data entry terminal and output printer.
- One Model 42 disk drive – a high-density, direct-access data storage device.

The Small Systems User

Last April, Carrollton tested its most important selection criterion – ease of expandability.

The city's population, which expanded from 19,000 to 24,000 in one year, dictated the addition of an additional disk drive, one 150 line/min. hard-copy printer and two Model 80 display terminals.

"These additions in main memory and peripheral gear were easily made with minimal impact upon our programming," Luallen said.

According to Luallen, three clerks were easily trained to operate the System Ten; they now alternate work assignments at the video display terminals.

Bill processing is quick and simple, he noted. The operator needs only to key in the customer's identification number and the updated meter reading, Luallen explained.

"The line printer automatically types out the billing date, customer name and address, inserts the previous reading and extends the charges individually for water, sewer and garbage and then totals the bill," he said.

Each month, 125 to 150 changes or updates are added to the system including new customers, deleted customers, changes of address and posting of cash receipts for water, sewage, garbage and tax.

The processor also monitors water usage and delinquent accounts, according to Luallen.

To run the city's 150 twice-monthly payroll checks, the operator simply calls the disk-filed payroll deduction tables into the main memory, via one of the terminals.

To prepare an individual check, the clerk enters the employee number and the totals of regular and overtime hours. The computer figures rates, extends amounts, makes deductions and writes the checks.

Luallen pointed out that with the computer, the payroll checks can be prepared in two hours instead of a full day under the previous manual method.

As a by-product, the computer generates the various monthly, quarterly and annual government payroll reports, tax forms (W2) and statements for the Old Age Retirement System (OARS) and Texas Municipal Retirement System (TMRS).

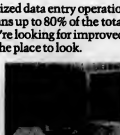
Once a year, Carrollton's System Ten is used to issue property tax statements to the community's homeowners. On a quarterly basis, delinquent tax statements (with updated interest and penalty amounts) are produced to aid collections.

Luallen is now contemplating adding vehicle maintenance records and the tracking of outstanding warrants for the police department.

The computer's multiprocessing capability allows one operator to update the utility data base with new water customers while another operator is updating payroll records, Luallen said.

"Without our System Ten we would have hired two additional clerks just to keep pace with our utility billing, and all our systems would be on a manual basis with no provision for handling future growth," he added.

In even a modest sized data entry operation, the cost of labor runs up to 80% of the total cost. So when you're looking for improved efficiency, that's the place to look.



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But there's a lot more to it. ENTREX key-to-disk systems reduce training time and turnover (operators love DATA/SCOPES with their familiar keyboard and English language instructions). They give supervisors unprecedented control over all phases of validating, merging, tabulating, monitoring, and data outputs, to name only a few of the preprogrammed features. And everything proceeds simultaneously, so there's no time wasted in waiting.

All ENTREX systems are fully upwards compatible:

System 280 – New, for relatively small data entry operations;

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DAYTON, Ohio – Graduates, seniors and dropouts from two area high schools can check out a career, find a job, screen a college or seek financial aid with the aid of an automated guidance information system and placement service here.

Located at career centers in Dunbar High School and Stivers-Patterson Vocational High School, the system operates through terminals linked to a Hewlett-Packard 2000/C mini housed at the Metropolitan Dayton Educational Cooperative Association. The system was developed by Time Share Corp., according to a "Project Place" spokesman.

Supported by general fund monies and the Division of Vocational Education, Ohio State Department of Education, the guidance information system provides dats on careers, colleges and financial aid while the job placement system matches students to jobs available in the community, he explained.

So far this year, the project has processed applications of more than 1,000 students and has contacted 597 Dayton employers, the spokesman said. Seventy applicants have been matched with job openings in the past nine months, and another 70 have found full-time or part-time jobs through the efforts of the career office.

Because the system is updated about once a year, the spokesman suggested many more young people have been able to find current information on two- and four-year colleges, scholarships, financial aid and career profiles.

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Thermodynamics Comes to the Screen

PITTSBURGH, Pa. – A group of Carnegie-Mellon University scientists and graphic designers here are using computer techniques to produce a color film which depicts concepts of solution thermodynamics in animated form.

Supported by a two-year National Science Foundation grant of $83,620, and by a Carnegie-Mellon University contribution of facilities time, the completed film will be used to help undergraduate science majors grasp the principles of thermodynamics more quickly.

Universal Laws

Thermodynamics – which is the study of heat and its effect on matter and other forms of energy – is based on laws that govern man's understanding of everything from home heating and lighting to transportation, manufacturing and communications.

Students study these concepts by plotting phase diagrams to represent the changes in a given mixture that result from changes in its temperature or composition.

The film will animate these changes for a dynamic effect.

To achieve the illusion of continuous movement, filmmakers will use a 16mm camera to photograph, one frame at a time, thousands of successive sets of slightly varying schematic drawings on transparent acetate sheets traced from computer plots.

Run on a projector at full speed, the separate drawings blend together and "move."

More than 100 plots are needed for each scene, with a total of about 3,000 expected to be used in the entire film.

"There is a very definite need for visuals in this area of scientific education," said Dr. Claude H.P. Lupis, professor of metallurgy and the film's executive producer.

The cinematic explanation should improve the rate at which students can absorb these concepts, because, according to Jairus C. Warner, research engineer in metallurgy and the film's producer-director, "the concepts are extremely dynamic. No single picture taken out of the film provides a meaningful illustration," he said.

"Our production method is also very unusual," Warner said. "I don't know of any other project of this magnitude undertaken with plots copied from computer output," Warner said.

The plots for the film came from a computer package developed by Lupis and Warner.

Flow Controlled at Snake River Dams

McNARY, Ore. – Three giant dams on the Snake River in Washington are generating hydroelectric power and controlling river flow conditions under the remote control of a computer.

Ice Harbor, Lower Monumental and Little Goose dams are connected by microwave to the IBM 1800 computer at McNary Dam in Oregon on the Columbia River.

Change Reaction

Thirty sensing devices at each of the Snake River dams continually transmit information to the computer, such as height of the water, its rate of flow and the amount of power being generated. As conditions change at the dams, the 1800 automatically directs equipment to react to correct conditions.

Although the computer controls the dams individually, it varies the control at each depending on the conditions at the others. This eliminates the possibility of one dam spilling water while the other two operate at less than capacity, thus ensuring optimum conditions along the entire lower Snake River.

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Dr. Dixon Doll leads Seminar

Dr. Dixon Doll, the highly respected teleprocessing consultant, leads the expert faculty at this seminar. Dr. Doll has his PhD in Systems Engineering from The University of Michigan, and many years of experience in this field as a consultant and educator. He has taught graduate level computer systems design, and has served as a professional consultant to such firms as IBM, Raytheon, ICC and MCI. Dr. Doll takes an active part in the entire seminar.

You should attend this seminar, if:

- You are currently involved in data communications on a management or operational level and wish to expand your knowledge of the field.
- Your company will be going into this field in the near future.

Charges and Enrollment

The total cost for this two-day seminar is $350, including workbook, reference materials, year-long update service, luncheons and continental breakfasts. This does not include hotel rooms, if necessary.

To enroll, look over the schedule below, fill out the coupon and send it in. Remember, enrollment must be limited, so don't wait until it's too late.

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Psychometric Modeling: A How-To for Legal Eagles

Dr. Harold J. Spaeth, who successfully predicted the Supreme Court ruling against former President Richard M. Nixon in the case of the Watergate tapes, describes here the concept of psychometric modeling, the method used in his predictions.

By Harold J. Spaeth
Special to Computerworld

The 1974 U.S. Supreme Court decision in the Detroit Cross-District Busing Case illustrates well the psychometric modeling technique used to predict the justices' votes and the outcome of pending Supreme Court decisions.

In the Detroit busing case, all parties to the litigation agreed that Detroit's schools were segregated. The precise question was what to do about it.

At issue here was the validity of busing Detroit school children into 52 suburban school districts and busing those from the suburban districts into Detroit's schools.

It also raised a broader question: Is desegregation to end at the city limits, or may surrounding suburban districts be added to achieve a more equal balance of black and white children?

If all nine justices participate in a decision, they may combine in 512 different voting alignments, ranging from 9-0 to 0-9. If only eight justices participate, as in the case of the Watergate tapes, only 326 different voting patterns are possible.

The writer has analyzed better than 97% of the Court's decisions since 1958, and

A Pretty Good Record

Harold Spaeth is a professor of political science and a member of the Computer Institute for Social Science Research at Michigan State University.

Author of a column, "The Supreme Court Computer," which appears in the *Los Angeles Herald-Examiner*, Spaeth correctly predicted the outcome in 33 of 34 decisions during the past two terms of the Court, anticipating the votes of individual justices with 90% accuracy.

categorized the decisions into 80 separate cumulative scales, with the content of each of these scales defined as precisely as the data permit.

The cumulative scale to which the Detroit case pertained is desegregation. Although school desegregation is arguably an issue separate from other forms of segregation, there have been too few school desegregation cases to allow for the formation of a separate school desegregation scale.

The data, however, did show that the Burger Court had decided 17 school desegregation cases, and not only did all 17 decisions support desegregation, so did 108 of the 117 votes cast in these cases (92%).

On the face of the most directly relevant decisions, the vote in the Detroit case should have unanimously supported cross-district busing.

Prediction, however, is not so simple.

Computer-dependent data reduction techniques – factor analysis, metric multidimensional scaling and cluster analysis – reveal that desegregation is one of 15 scales that associate closely together to form one of three "values" that explain approximately 85% of the Court's decisions.

The contents of these three factors, or clusters, warrant labeling them as the values of freedom, equality, and New Deal economics. The value to which desegregation pertains is equality.

By averaging the scores of each justice on each of the scales that comprise the value of equality, one finds that three of the justices are supportive of equality: Douglas, +.85; Bennan, +.62; and Marshall, +.59. Four are opposed: Rehnquist, -.65; Burger, -.54; Powell, -.51; and Blackmun, -.34. Two are moderate or neutral, White and Stewart, both at +.03.

Scale scores are simply a function of the point in a scale at which a given justice begins to respond in a consistently negative fashion to the stimulus that is assumed to motivate his voting behavior. The scores themselves may range from +1.00 (never voted against desegregation, for example) to -1.00 (never voted in favor).

Justices who support all three of the major values, as do Douglas, Brennan and Marshall, are labeled "liberals." Conversely, those who oppose freedom, equality and New Deal economics may be called "conservatives." Fitting this description are the four Nixon appointees – Burger, Blackmun, Powell and Rehnquist.

The two remaining justices, Stewart and White, are "moderates," neither supporting nor opposing any of the three major values.

Given the extremeness of the desegregation proposed in the Detroit case, I judged the value of equality to be more predictable of the outcome than the pattern displayed in the school desegregation decisions. On this basis, Douglas, Brennan and Marshall would support cross-district busing and the four Nixon appointees would oppose it.

The outcome, then, would turn on the votes of White and Stewart. During his dozen years on the Supreme Court, White had participated in 28 school desegregation decisions. In each of them, he voted for desegregation.

Stewart, on the other hand, voted against school desegregation twice as a member of the Burger Court and once on the Warren Court.

Accordingly, White would vote with the liberals, Stewart with the four Nixon conservatives.

Supporting this conclusion were two related decisions. The first was a June, 1972 decision in which the four Nixon appointees dissented from a ruling that a Virginia city could not separate itself from the county school district of which it was a part and which was under a court order to desegregate. Speaking through the Chief Justice, the dissenters protested that the majority was equating desegregation with racial balance.

The other decision occurred in May, 1973 when the Court divided 4-4 and thereby upheld a lower court ruling that two suburban districts could not be forced to consolidate with the schools of Richmond, Va.

Although the Court does not report how the individual justices vote when they are tied, there is little doubt that Rehnquist, Burger, Blackmun and Stewart opposed consolidation, with White and the three liberals supportive. Justice Powell did not participate because of former membership on both the State and Richmond school boards.

These data further supported a 5-4 decision against cross-district busing.

The Justices acted right on cue, voting 5-4, with Stewart and the Nixon appointees comprising the majority and White and the three liberals dissenting.

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'Information Utilities' Theme of Asis-74

ATLANTA – The American Society for Information Science (Asis) has chosen "Information Utilities" as its theme for Asis-74 to emphasize the development and use of on-demand information services required by large segments of the general public.

The development and regulation of information utilities, including regulatory policies, franchising and safeguards will be discussed, as will the impact of information utilities on the information community and society in general.

Each day of the conference, Oct. 13-17, will lead off with a two-hour plenary session addressed to the daily theme. The technical program following will then present contributed papers, special sessions and various programs organized by the special interest groups.

Seven user workshops are being presented at Asis in conjunction with the Information Industry Association (IIA). They include Data Communications: the Future of Publishing; Educational Information Sources; Techniques for Using Micropublished Materials; On-Line Data Base Services; Financial and Business Information Techniques; Key to Using Government Documents: How Do You Get Them?; and The Economics of Library Automation: Bases for Decisions by Library Directors.

Technical sessions will cover such topics as specialized information systems and services; information use and users' needs; semiotic foundation of information science; bibliometrics; indexing and classification and information networks. Human information processing; data acquisition, consolidation and management; and information retrieval and dissemination will also be discussed.

The Office of Science Information Service of the National Science Foundation will participate in two programs – a colloquium, "The Future of Scientific Communications – The Year 2000: Work in Progress," and a special session entitled "Toward National Coordination of Science and Technical Information: Through Research and Development."

Registration for the conference, which will be held at the Hyatt Regency Atlanta, is $50 for Asis members, $65 for nonmembers and $3 for students.

Further details are available from Asis, 1155 16th St. N.W., Washington, D.C. 20036.

Call for Papers

Third International Optical Computing Symposium, April 23-25, 1975, Washington, D.C.

Original papers on all aspects of optical computing, but especially papers which emphasize the role of optical processing techniques and systems in digital computer processes are requested.

A 200-word summary of a proposed paper and biographical sketch of the author(s) should be submitted by Nov. 15 to Third International Optical Computing Symposium, P.O. Box 639, Silver Spring, Md. 20901.

International Computer Symposium 75, sponsored by ACM European Region and European Cooperation in Informatics, June 2-5, 1975, Antibes/Juan-les-Pins, France.

Original papers or survey articles on theoretical or practical aspects of computer science and its applications are solicited.

Six copies of the complete texts of papers, limited to 20 double-spaced typewritten pages including an abstract, figures and references should be submitted before Oct. 15 to Prof. E. Gelenbe, c/o IRIA, B.P. 5, 78150 Le Chesnay, France.

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Seminar created by Leo J. Cohen end staff of Performance Development Corporation.

We selected this seminar for inclusion in the EDP Seminar Series after watching it in action. It was developed by Performance Development Corporation under the direction of its President, Leo J Cohen, a nationally known consultant in date base systems. Mr. Cohen will continue as seminar director, and the seminar leaders are PDC staff who ere experts in their own right. They include Alan Stutz end Steve Robinson, both of whom ere well known for their work in this area. All instructional staff have been involved in design end implementation of a variety of data base systems for major U.S. computer using organizations.

Who should attend.
If you're going to be involved in the design end implementation of a data base system – whether es the DP Menager. Data Base Administretor, plenner, analyst or programmer – then you should be at this seminar. It will help your department, your company end you!

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We'll be offering this seminar in the following cities during the later part of 1974. Charge for ertire 5 day seminar, including course materials, continental breakfasts and luncheons is $350. Additional registrants from the same company get a reduced rate of $300. Fees do not include hotel rooms if necessary, but we have reserved space for attendees who desire rooms. Remember, enrollment is limited!

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CI Notes

IBM, Sperry Rand Agree To Cross License Patents

NEW YORK – Sperry Rand Corp. has entered into a nonexclusive patent cross license agreement with IBM in the area of information handling.

Information handling has been defined as computing, classifying, processing, transmitting, receiving, retrieving, switching, sorting or displaying any form of information, intelligence or data.

The agreement covers patents issuing on applications filed prior to July 1, 1979, and supercedes a 1965 agreement covering patents prior to November 15, 1970.

In addition, IBM released Sperry and its subsidiaries – including Information Storage Systems, Inc. from liability to IBM for any infringement or alleged infringement of the IBM licensed patents.

Sperry has agreed to pay IBM $250,000 upon execution of the agreement.

Instrumentation Market Holds Promise for Micros

NEW YORK – Analytical instrument control is a burgeoning market for microprocessors, according to a recent study by Frost & Sullivan, Inc.

The market for analytical instrumentation in the U.S. is projected to increase by nearly 2-1/2 times from current levels to $1.3 billion by 1982, the study stated.

The study sees the more than 100 manufacturing firms in the field turning to microcomputer-based systems for the instrumentation control and data reduction and analyses, displacing minicomputer-based systems.

But, the report adds, minicomputer systems will continue to be used wherever five or more process instruments are to be tied together in a system's application.

Don't Touch Your Dial . . .

ARMONK, N.Y. – IBM is going to court again, but this time vicariously.

IBM will sponsor the television screening of a new play entitled "Clarence Darrow," starring Henry Fonda.

The play, based on Irving Stone's "Clarence Darrow for the Defense," will be aired Sept. 4 on NBC Television.

Supershorts

The Graphics Systems Division of Gould, Inc. has agreed to market Beta COM systems in Japan and Australia. Canon, Inc., Tokyo, and Management Information Systems Pty. Ltd., South Melbourne, have been named distributors.

– – –

Interdata, Inc. has appointed Informatica Nacional, S.A. of Mexico City as exclusive distributor for its minicomputers there.

As Outcome of IBM Case

CIA Predicts Restructuring of Industry

By Edith Holmes
Of the CW Staff

NEW YORK – Regardless of what vendors, users or investors think should happen, the computer industry is on the verge of fundamental structural change, spokesmen for the Computer Industry Association (CIA) told an audience of security analysts at a meeting here recently.

Speaking before the New York Society of Security Analysts, CIA President Dan L. McGurk and A.G.W. (Jack) Biddle, executive director for the association, said dismissal of the Justice Department's suit against IBM is unlikely, despite the hopes of many on Wall Street.

Following the ITT-Watergate situation, the Justice Department "has a serious image problem at the present time," Biddle remarked. "It is necessary for them to finally take a case and not cop out, not sell out, but move it ahead as a public interest issue."

Change is further inevitable because of the working level attitude of the people in the Justice Department, according to Biddle. "They're very sincere about this case . . . any political pressure to settle would probably result in some very major headlines."

Bills In Congress

In the Congress, Senators John V. Tunney (D-Calif.) and Philip A. Hart (D-Mich.) have each proposed bills whose passage would affect the structure of the computer industry, he added. Tunney's bill, dealing with public exposure of consent decree settlements, and Hart's bill, concerning the impact of concentration of power within any industry, have a better chance of becoming law today that they did three years ago, before ITT, Watergate and a number of other events, Biddle asserted.

Should IBM be found innocent of the charges leveled against it by the government, Biddle commented, pressures from the Hart Industrial Reorganization Act and nations attempting to protect their share of the computer industry will necessitate change [CW, July 31].

Should IBM lose the case, both CIA and the Justice Department expect the computer industry will be restructured, said Biddle.

Shift to Restructuring

McGurk outlined the changes in the department's suit against IBM since its 1969 action, detailing the shift in preference from regulating to restructuring the industry.

In 1969, the Justice Department asked for some specific regulatory relief for the industry: "no bundled pricing, no price discrimination, a halt to unreasonable differences in rates of return on different equipment and no premature product announcements," McGurk said.

But by 1972, he added, "they had changed the emphasis of their relief requests and asked primarily for a total reorganization of the computer systems business of IBM into several discrete, separate, independent and competitively balanced entities capable of competing successfully worldwide."

McGurk suggested the department changed the emphasis of its suit following the realization that its 1969 requests would probably go the route of the regulatory and injunctive provisions of its 1932 and 1952 settlements with IBM.

"In seeking a new solution, the third bite out of the apple, the department hopes, will last longer than the 20 years each of the other two has lasted," he said.

McGurk reiterated the association's preference for restructuring because it would keep government intervention to a minimum, and Biddle described a plan which calls for a horizontal breakup of IBM.

Five new companies or "newcos" would be created, each large enough to compete on an unrestricted, unregulated, nongov-

(Continued on Page 30)

More UK Users Buying Packages From Independents, Study Finds

By Don Leavitt
Of the CW Staff

LONDON – The software package market in Europe will be worth in excess of $58 million by 1980, and the United Kingdom will account for about $13.8 million of that total, according to a recent study by IDC Europa Ltd.

Growth in the UK market has slowed "slightly" in recent months in the face of downward economic pressures, the market researchers found, but there has still been a steady increase in sales of package programs to UK clients from independent sources.

Department of Trade and Industry statistics quoted in the study show sales of $7.1 million in the second quarter of 1973, compared with sales of $6.5 million a year earlier. Paradoxically, although the economy has slowed the short-term growth, IDC felt the same pressures should stimulate the long-term market.

The study cited the classic reasons for going to outside sources: packages tend to be more efficient and more sophisticated than the users could write themselves and, by spreading development costs, they tend to be less expensive as well.

Despite this long-term optimism, software houses here are going to have to work for their growth. They "must look to Europe for continued expansion," IDC said, but this should be a good move because "there are indications that European users are displaying increasing interest in the packages available" from UK software firms.

Medium-Sized Users Biggest Buyers

Use of packages in the UK varies by size of installation, which is defined by equipment rental costs. "The more sophisticated users are more likely to be aware of the advantages and availability of packages," the report found.

However, "the major area of use is among the medium-sized installations," which by IDC definition have monthly equipment rentals of $5,000 to $10,000. As much as 65% of these users go to outside sources for help.

Users of small business systems and minicomputers have not yet gone to independent sources, probably because of the limited and scattered nature of this user base.

31% of IBM Users Go Outside

Looking at the UK marketplace by hardware vendor, IDC found – to no one's surprise – that IBM users are the largest block of purchasers of packages of all kinds. This reflects IBM's dominant position in most market areas and the availability of effective IBM-compatible software.

Slightly over 31% of all IBM installations consider using outside software houses, or purchasing packages, as normal policy. This compares – in percentage of market penetration – with Univac users (33.3% of which go "outside") and with Burroughs (28.6%). The sharply lower number of these installations, however, diminish the importance of those non-IBM figures.

According to a census included in the market study, there are, however, more ICL sites than IBM. But only 15.4% of the ICL shops go outside as a matter of policy. "It is therefore apparent that a good deal of marketing effort is needed in this sector," the report went on.

Going further, it noted that "40% of ICL users foresaw an increase in the use of packages by 1980" and "there is every reason to believe" that the majority of users "will ultimately arrive at the conviction that the package is the best approach in many areas."

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Service Firms Finding

Clients Want More Packages, Less Time

By Molly Upton
Of the CW Staff

NEWTON, Mass. — Several time-sharing firms are reporting increased business, but whether this is attributable to the general economic downturn and tight money is hard to say.

Jerry Dreyer, executive director of the Association of Data Processing Service Organizations (Adapso), observed that even in 1970 and 1971, when the recession hit, business in the services sector was good.

Service firms report business is living up to their projections, he said. Adapso last year projected total revenues for the sector at a little over $3 billion for 1974.

Firms offering remote processing are showing a higher growth rate, Dreyer said, although batch business continues strong.

Officials at both Tymshare, Inc. and National CSs, Inc. (NCSS) cited an increased demand for packages that handle data management, data base establishment and modeling.

Although Tymshare's business is split fairly evenly between those who use its software exclusively and those who want raw computer time, the trend is swinging more toward the packages, according to Bill Peterman, Tymshare's Washington (D.C.) district manager.

Tymshare maintains its own development staff working on long range projects in addition to a variety of commercial packages.

"Customers are finding using our software is easier and saves front end development work, and they like the flexibility," he said.

In the Washington area, about 80% of Tymshare's business comes from the government, Peterman said, adding that revenues have doubled since January for the region.

"We see an excellent trend continuing," he noted. "The government is shifting from buying hardware to the use of more service organizations," he said.

For Tymshare as a whole, government business is only responsible for about 6% or 7%, he noted.

NCSS "isn't really in the raw time sale business, because there's always somebody who will sell raw time less expensively than we will," explained Bob Weissman, director of finance for NCSS, which emphasizes the services concept.

"We prefer to be selling on a value-added basis than on a resource basis . . . so we continue to develop capabilities for our system that lead the customer to use our services forever," he said.

NCSS delivers a CPU which includes a time-sharing operating system to each user or dedicates a CPU at its center to the user's needs.

"This is an alternative to the can of worms of maintaining hardware, software, personnel and a network," he said.

The nature of competition changes over time in the time-sharing field, he remarked. "The customer tends to view what he's purchasing less as a commodity and more as a service, which includes network, hardware and software."

'One Thing Leads To Another...'

MONTVALE, N.J. — One implication of IBM's agreement to enter the satellite business is a back door entry into the services industry, noted Jerry Dreyer, executive director of the Association of Data Processing Services (Adapso).

"It's not just data communications . . . one thing leads to another," he explained.

Another possibility is government regulation, both in the areas of communications and data processing.

The privacy issue seems to be inviting regulation, and the fact that IBM is involved "could lead to perhaps another investigation and a reevaluation of" a decision in 1966 that the DP industry should not be regulated. This occurred as a result of an investigation into the interdependence of common carriers and data processing, he explained.

However, Dreyer said he has a positive attitude toward IBM's entry as competition for AT&T.

NEREM 74 SEMINARS IN BOSTON

MINI- AND MICROCOMPUTERS SEMINAR

Seminar Chairman: A. C. Knowles, Digital Equipment Corp. Maynard, MA

Monday and Tuesday, October 28 and 29

Commonwealth Ballroom of the Sheraton-Boston Hotel

9:30 am. Monday

S-1 DEVICE TECHNOLOGY

Chairman: W. H. Roberts, western Digital Corp., Newport Beach, CA

LSI-16 THE WORLD'S FIRST 16-BIT SOS MINICOMPUTER — L. E. Taylor, General Automation Inc., Anaheim CA

A HIGH PERFORMANCE, MICROPROGRAMMED NMOS-LSI PROCESSOR FOR 8 AND 16 BIT APPLICATIONS — J. Saha and W. B. Pohlman, Western Digital Corp., Newport Beach, CA

MOTOROLA M6800 MICROCOMPUTER AN ARCHITECTURE DESIGNED FOR EASE OF USE — T. H. Bennett, Motorola Semiconductor Products, Inc., Phoenix, AZ

4K RAM SYSTEM DESIGN CONSIDERATIONS — J. E. Coe, Mostek Corp., Carrollton, TX

2:00 pm. Monday

S-2 MAIN FRAME AND COMPUTER TECHNOLOGY

Chairman: E. D. Crockett, Hewlett-Packard Co., Cupertino, CA

THE TECHNOLOGY OF THE COMPUTER — C. G. Bell, Digital Equipment Corp., Maynard, MA

AN OVERVIEW OF MAJOR MINICOMPUTER PERIPHERALS — R. J. Dennet, Hewlett-Packard Co., Cupertino, CA

GOING REAL-TIME WITH PEOPLE-TERMINAL TRENDS AND PRODUCTS — J. A. Wolaver, Digital Equipment Corp., Maynard, MA

TRENDS IN MINICOMPUTER SYSTEMS AND SYSTEMS SOFTWARE — E. D. Crockett, Hewlett-Packard Co., Cupertino, CA

9:30 am. Tuesday

S-3 INDUSTRIAL APPLICATIONS

Chairman: A. T. Devault, General Automation Inc., Anaheim CA

BUILDING MANAGEMENT SYSTEMS — J. H. O'Connell and D. M. Priestley, RCA, Burlington, MA

A PROCESS CONTROL LANGUAGE FOR MICROPROCESSORS — L. H. Anderson, COMSTAR, Edina, MN

PRATICAL CONTROL APPLICATIONS FOR MICROCOMPUTERS — J. Rapicault, R2E Microcomputers, Orsay, France

MULTI TASK EXECUTIVES AN APPROACH TO MICROPROCESSOR APPLICATION SOFTWARE — P. Probst, National Semiconductor Corp., Santa Clara, CA

2:00 pm. Tuesday

S-4 SCIENTIFIC APPLICATIONS

Chairman: E. Kramer, Digital Equipment Corp., Maynard, MA

LABORATORY AUTOMATION — D. Glover, Digital Equipment Corp., Maynard, MA

MINICOMPUTER APPLICATIONS IN CHEMISTRY-THE PRESENT AND A LOOK INTO THE FUTURE — D. Dix, Dow Chemical, Walnut, MA

THE NORTHEASTERN UNIVERSITY HIGH ENERGY PHYSICS DATA ACQUISITION SYSTEM — W. Fenzlen, Northeastern University, Boston, MA

MICRO- AND MINICOMPUTER APPLICATIONS IN BIOMEDICINE — A. Gottmann, MD, Metropolitan Labs, Denver, CO

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CIA Heads Predict Structural Changes

(Continued on Page 29)

ernmental intervention basis, he said [CW, Aug. 7].

Most of the users who commented on the CIA statements in a panel discussion that followed agreed that "regulation would only promote stagnation."

But David R. Hathaway of G.A. Saxton expressed the views of many when he questioned how easily the industry could be restructured. "It's just an awesome responsibility," he said, "I don't know who's equipped to do it."

Vertical Reconstruction

Others doubted the wisdom of restructuring IBM along systems lines. What about vertical restructuring, "recognizing the system as a sum of components or elements?" Eugene K. Collins, director of research for Evans & Co., asked the other panelists. "It seems to me that the end-user data processing marketplace is already beginning to tell us that the industry should be restructured along those lines."

Subsequent arguments indicated vertical restructuring could tend to lock in the current technology, particularly since computer systems are designed as a whole.

But the audience listened again when a third solution, one with the shareholder in mind, was proposed by Tom Franklin, legal counsel for International Data Corp.

Franklin suggested a short-term, voluntary divestiture negotiated bilaterally between the Justice Department and IBM as a solution which would put the industry through a minimum of chaos and discontinuity.

While he agreed with Franklin on a short-term basis, Hathaway said he thought any long-term divestiture or restructuring would "slow the pace of technological change.

"Perhaps users would greet this with a certain sense of relief, but if you're viewing it in terms of development of new applications and further lowering of your cost of computing, it may not be in their good in the long run," he added.

While vendors and investors have stayed abreast of IBM's market position and practices because they've had to, the user has rarely been as aware of the market situation, panel members agreed. So far users seem unconcerned, McGurk said, but he expects to see attitudes evolve toward increasing interest as the U.S.-IBM case progresses.

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Commerce Pushing Development Of Japanese Market With ACT '75'

By Toni Wiseman
Of the CW Staff

WASHINGTON, D.C. – The U.S. Department of Commerce, recognizing the marketing potential for computer products in Japan, has organized an American Computer Technology Exhibition, ACT "75," to be held at the U.S. Trade Center in Tokyo next February.

The department stated that Japan is rapidly expanding the use of data communications within the country. And this

International News

expansion, a government report said, is expected to accelerate in the future, aided by the 1973 liberalization of subscribers' telephone and telex circuits for private data communications use and by the increased use of time-sharing systems currently being developed in Japan.

In 1972, Japan imported a total of 10,643 digital computers. Of these, 2,578 systems, valued at $51.6 million, were imported from the U.S. While the number of U.S. imports dropped to 2,537 in 1973, the value of the imports rose to $68.2 million.

Input/output peripherals is another promising market area, according to government statistics. Commerce expects the usage of on-line peripheral equipment to more than triple by the end of the Japanese fiscal year 1976.

Total Japanese peripheral equipment imports, including input, output and memory, were valued at $123.7 million for 1972, of which $64.3 million was for U.S. imports. By 1973, that figure had risen to $98.2 million.

'Highly Salable'

The department has accumulated a list of "highly salable" products in Japan. In the data communications equipment category, these include large and ultralarge CPUs, micro and mini terminal systems, high-speed modems and concentrators, and point-of-sale and automatic data collection systems.

In the input/output peripherals category, document scanners and OCR/Micr devices, high-speed printers, COM systems, CRT consoles with interact devices and graphic recorders and plotters have been designated as "highly salable."

The department noted that both the 1973 circuit liberalization and efforts by the domestic industry to raise its technological level prior to the announced 1975 liberalization of imports and foreign investment should increase the market potential for U.S. advanced peripheral equipment.

No official statistics on imports/exports of software are available. However, Commerce said Japan's plan to increase both the rate of growth and the rate of technological advancement of the domestic industry should serve to substantially raise the already high market potential for sales of U.S. software.

The Japanese government, department report noted, approved 11 licensing-agreements in 1972, of which 10 were with U.S. software houses, and another 10 in 1973 of which eight were U.S.-based.

All advanced large-project software and application packages, particularly social information system software for common usage and application packages for mini- and microcomputers are good market prospects, the department said.

The Department of Commerce has put together a comprehensive packet listing marketing potential and guidelines for participation in ACT "75." This is available from the Department of Commerce, Domestic and International Business Administration, Bureau of International Commerce, Washington, D.C. 20230.

Large CPUs 'Growing' in France

LONDON – The growth rate of the installed base of computers in France varied from 7.5% for small machines to zero for medium-size equipment to 38% for large machines, according to a survey by the Commission du Traitement et de la Transmission de L'Informatique (Cotti).

The survey, reported in *EDP/Europa Report* (EDP/ER), noted the total installed base of general-purpose computers grew by 19.5% in 1973, compared with a rate of 13.5% in 1972.

The installed base as of Jan. 1, 1974 included 2,852 small machines ($10,500 to $52,300) amounting to 26.3% of the total systems installed in France. Machines with a value between $52,300 and $292,800 accounted for 51.6% of the installed base, an annual growth decline of 4%. Total number of installed machines in this category is 5,596.

The number of large-scale machines ($1.4 million to $4.3 million) rose from 425 to 586. They account for 5.4% of the total installed base.

In terms of applications, 56.7% of the total 10,842 computers in France are used for general-purpose computing, 28.6% for management, 12.6% for manufacturing and 2.1% for scientific applications.

The Cotti survey also listed totals for various classes of peripherals. Numbers include: 13,159 on-line printers, 9,861 card readers, 14,331 tape drives, 552 cassettes and 12,881 exchangeable disk drives.

In addition, as of 1974, there were 12,867 unintelligent terminals and 4,152 intelligent terminals installed in France.

Foreign Orders & Installations

Monash University, Melbourne, Australia, has installed a Burroughs B6700 for engineering work, student instruction and scientific research.

Royal Gazette, Ltd., Bermuda, has installed three Photon, Inc. Pacesetter Mark I phototypesetters.

Datacom Ltd., an Irish service bureau, has ordered a Univac 1106 system. The computer will be linked to Univac 9300 processors serving as remote terminals in Dublin, Cork, Galway and the UK.

GNES, a French space organization, has ordered an OBC/AR computer from Saab-Scania for the Ariane space project.

Ontario Hydro, a Canadian utility, has ordered a Univac 1110 for engineering and scientific work as well as for management information.

Ulsan Institute of Technology, Korea, has ordered a Modular One computer from Computer Technology Ltd. for student programming and school administration.

Industrija Nafte, Yugoslavia, has installed a Univac 1110 and a Univac Series 60 6135 to process seismic data.

Southern Electricity Board, England, has installed a Modular One computer from Computer Technology Ltd. for general applications.

Datamont, Italy, has installed a Univac 1106 for scientific and design calculations.

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Microprocessors Prominent

Wescon Sessions Stress Applications, State of the Art

LOS ANGELES – More than 70 hours of sessions, heavily oriented toward trends and applications of technology to marketable products and systems and toward updating information on new and emerging devices, are in store for Wescon 74 attendees.

All sessions will be presented in the Los Angeles Convention Center, Sept. 10-13, concurrent with the 540-booth electronics exhibition.

Four sessions on microprocessors will highlight the conference. "The Microprocessor Revolution Parts I and II" explores the concepts and impact of microprocessors on electronic equipment design.

Papers for these sessions include "Systems Languages: Management's Key to Controlled Software Evolution," "How to Use Your Microcomputer for All Its Worth – During Data Handling," "Microprocessors: A Component for All Seasons" and "Distributed Data Acquisition with Microprocessors."

A survey session entitled "Microprocessors – Market, Design, Applications" will provide an overview for attendees. The four papers to be presented are "The Microprocessor Market – Now and Future," "Building Low-Cost Systems With Microprocessor Hardware," "Microprocessor Design – Use the Software, too," and "How to Select a Microprocessor for Your Application."

A follow-on survey session, "Microprocessor – The 2nd Generation," will present several new and available systems. These include Fairchild Semiconductor's F8 microprocessor, Intel Corp.'s microcomputer family, Motorola Semiconductor's M6800 N-channel processor family, National Semiconductor's Face, RCA Solid State's COS/MOS microprocessor, Rockwell Microelectronics' eight-bit parallel processing system and Signetics Corp.'s 2650 eight-bit processor.

"Quo Vadis Electronics" is the title of a management-oriented panel session. Papers include "The Future of Electronics," "Electronics and the Quality of Life," "The Corporation's Measurement of Success" and "The Role of Telecommunications and Computers in Facilitating Technological Changes."

"Dataphone Digital System (DDS)," "Canadian Nationwide Dataroute System," "International Digital Data Service" and "The User's Current Needs" are the papers around which an application session on "The Real World of Digital Communications" will center.

A survey session on charge-coupled devices (CCD) and an application session on advances in CCD memories will offer much papers as "Signal Processing Applications for CCDs," "CCD Image Sensors," "CCDs as Drum and Disk Equivalents" and "CCD Memory Concepts."

Other sessions of interest will discuss LSI testing and emerging display technologies.

Additional selected papers with application to the computer industry include "Application of Computers to the Dairy Industry" and "Reliability of Ceramic and Plastic Encapsulated IC's in a Computer Environment."

Finally, a management session will deal with the question of "What to Do If the Lights Go Out – The Uninterruptible Power Story." Papers for this session include "Designing Protection Against Brownouts and Blackouts Into a Large Computer System," "Protecting Semiconductor Memory Against Power Variation of Interruption" and "Uninterruptible Power – Through the Eyes of a Power Supply Manufacturer."

Standing-Room-Only on Exhibit Floor

LOS ANGELES – All display and demonstration space for Wescon 74 has long been spoken for by some 350 companies, with 25 more on a waiting list, show managers reported.

A special section of the exhibit hall has been set aside for booths representing the computer and communications industries. Almost 30 companies will be exhibiting their equipment in this area.

Other parts of the exhibit floor will be devoted to components and microelectronics, instruments and instrumentation, and production and packaging.

The computer segment will be aimed primarily at electronics engineers, with computer-aided design, time-sharing and special-purpose systems comprising the main part of the exhibit. The show organizers admitted they expected to see more peripherals than minis on exhibit, but added that companies such as Hewlett-Packard and Tektronic, though not exhibiting in the computer section, would have computer equipment in their booths.

A partial list of exhibitors includes Burroughs, Data General, Digital Equipment, Digital Electronics, Compucorp, CRU Associates, Macrodata, Singer/Tele-Signal, Teradyne and Texas Instruments.

NEREM 74 SEMINARS IN BOSTON

COMPUTERS AND COMMUNICATIONS SEMINAR

Seminar Chairman J. Pendavlis, New England Telephone Co., Boston, MA

Wednesday and Thursday, October 30 and 31

Commonwealth Ballroom of the Sheraton-Boston Hotel

9:30 am. Wednesday

S-9 COMPUTER CONTROL IN SUPERVISION IN COMMUNICATIONS

Chairman W. B. Groth, IBM Corp., White Plains, NY

A COMPUTERIZED TOLL TICKETING SYSTEM — J. R. McHugh, IBM Corp., Boca Raton, FL

STORED PROGRAM CONTROL OF A KEY/PABX BUSINESS COMMUNICATION SYSTEM — J. D. Macak, Bell Northern Research, Ottawa, Ontario

ROLE OF COMPUTERS IN MOBILE DATA COMMUNICATION SYSTEMS — A. M. Gordonich, Motorola, Inc., Schaumburg, IL

INTERNATIONAL DIGITAL DATA SERVICE/COMPUTER APPLICATION — R. M. Jockers, Western Union International, Inc., New York, NY

2:00 pm. Wednesday

S-10 COMPUTERS/HELPING THE COMMUNICATIONS INDUSTRY DO A BETTER JOB

Chairman, R. C. Caby, Digital Equipment Corp., Maynard, MA

MINICOMPUTER AIDED TRAFFIC MEASUREMENT AND ANALYSIS — J. Manning, Applied Data Research, Inc., Princeton, NJ

MINICOMPUTERS IN A TELEPHONE OPERATING COMPANY/THE IMPACT ON MANAGEMENT AND ORGANIZATION — D. A. Bertotta, New York Telephone, New York, NY

MINICOMPUTERS ENHANCEMENT TO TELEPHONE SWITCHING MAINTENANCE SYSTEMS — C. J. Marsy, Bell Telephone Labs, Holmdel, NJ

MINICOMPUTER CONTROLLED MEASUREMENT OF VOICE BAND/WITH TRANSMISSION CIRCUIT PARAMETERS — I. E. Hardt, Collins Radio Co., Cedar Rapids, IA

9:30 am. Thursday

S-11 NEW COMMUNICATIONS SERVICES

Chairman R. Alter, Packet Communications Inc., Waltham, MA

DATAPHONE DIGITAL SERVICE — C. F. Stuebnk, AT&T Co., New York, NY

DATRAN'S SWITCHED DDIGITAL NETWORK — E. V. Fanshoel, Data Transmission Co., Vienna, VA

PACKET-SWITCHED DATA COMMUNICATIONS SERVICES — L. R. Talbert, Packet Communications Inc., Waltham, MA

PANEL DISCUSSION

2:00 pm. Thursday

S-12 PRACTICAL ASPECTS OF COMPUTER COMMUNICATIONS SYSTEMS

Chairman S. M. Isaacs, State Street Bank and Trust Co., Boston, MA

REAL TIME AND BATCH TRANSMISSION SYSTEMS PROJECT MANAGEMENT ARE THEY REALLY DIFFICULT? — I. H. Derman, National BankAmericard, Inc., San Mateo, CA

SWITCHING, PATCHING, MONITORING AND TESTING AT THE E-I/A DATA INTERFACE — R. S. Sepe, A. Lococano & A. D'Amorio, International Data Sciences, Inc., Providence, RI

WHEN TO USE PABX'S IN DATA NETWORKS — M. F. Roetter, A. D. Little Inc., Cambridge, MA

THE COST OF SECURITY IN COMPUTER-COMMUNICATIONS SYSTEMS — D. W. Lambert, MITRE Corp., Bedford, MA

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Contracts

Wangco, Inc. has received a contract, valued in excess of $1.1 million, from Dasyn International for Mod 7 digital tape drives and formatter which will be used in conjunction with the Dasyn 100 Source Data Operating System (SDOS).

American Management Systems, Inc. has been awarded a contract by the American Institute of Biological Sciences to provide computer services in support of the membership and subscription programs of the institute and five affiliated societies.

Brandon Applied Systems, Inc. has received a contract from the U.S. Department of Transportation's National Highway Safety Administration to design an on-line management information system for traffic safety programs.

Scientific Systems Services has been awarded a contract by Florida Power & Light for the development of a nuclear reactor computer program.

TRW Data Systems has received a contract from Allied Stores Corp. to supply System 4000 hardware and software to expand credit authorization to three Allied divisions.

Information International, Inc. has been awarded a $165,000 contract from the State of California to design software that will enable the installed Videocomp 800 photo composition system to operate on-line to the Stephen P. Teale Data Center's 370/168.

Computer Congeneries Corp. has received a five-year contract from Metro National Bank of Denver, Colo., for a complete on-line central information file system.

Information Displays, Inc. has been awarded a contract from ITT Electrophysics for a special Idigraf with 16 levels of intensity.

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Government Paper Indicates

TP Industry Control Concerns Canada

By T.M. Whiteman
Special to Computerworld

TORONTO, Ont. – Canadians are apparently becoming concerned about a dilution of their control over the domestic telecommunications manufacturing industry.

In a working paper of the Department of Communications dealing with the relationships of the Canadian telecommunications carriers and their equipment suppliers, it was suggested that a dilution of Canadian control in the manufacturing sector and a reduction in research and development activity would cause the hardware requirements of the Canadian carriers to be subordinate to the design and development dictates of larger and more influential markets.

"Once control manufacturing, development costs and the rate of innovation are lost to Canada, the economic consequences will prevent the realization of the full role of communications in the areas of trade, commerce, cultural enrichment and entertainment," the paper stated.

The working paper was produced as background to discussions between suppliers, the carriers and the various government agencies concerned.

For perspective, it is important to consider that the 23-member Canadian Telecommunications Carriers Association (CTCA) accounts for more than 99% of the Canadian telephone and telegraph service. Annual total purchases by the carriers for telecommunications equipment amounted to $1 billion in 1973 and is expected to reach $2 billion by 1980. The equipment needs of the carriers are supplied by about 235 companies.

"A domestic manufacturing industry with a Canadian-based R&D capability is necessary to ensure low-cost telecommunications in Canada," the paper stated.

"The decline of a strong Canadian presence in telecommunications research and development, manufacturing and distribution would have a profound effect on the carriers," the paper noted. "Equipment costs would increase and many other hidden costs associated with compatibility, standardization, documentation, training and premature obsolescence would add to the burden."

The inevitable consequence of carrier dependence on outside technology would result in higher prices and lower grade of service to Canadians, the paper argued.

"Canada's telecommunications carriers have been well served by the vertically integrated manufacturing industry and other specialized manufacturers," the paper said. "Captive markets and North American equipment standards have prevented excessive competition, and in consequence the supply industry is less fragmented than most other manufacturing sectors.

"Unrestricted competition in telecommunications manufacturing would weaken this predominantly Canadian industry," the paper argued, "resulting eventually in higher equipment prices to the carriers, since a fragmented industry cannot perform as efficiently as a lesser number of large integrated operations."

The government's working paper pointed out that actions taken in the U.S. to weaken the vertical integration structure, including restriction of the manufacturing arm to certain markets, are not appropriate to Canada, where research and development, manufacturing and carrier operations are on a much smaller scale.

"All developed countries have recognized the importance of a strong manufacturing capability in telecommunications and have taken special measures to support the manufacturing sectors," the report stated.

"Most telephone systems are owned and operated by the state, and monopoly purchasing is used to support a limited number of domestic manufacturers. As a consequence, trading in telecommunications equipment between developed countries is limited to a few highly specialized items."

The paper noted that the Canadian market for telecommunications equipment cannot support a large number of manufacturers and suggested a rational distribution of manufacturing activity, without encouraging the establishment of new foreign suppliers, which would eventually result in loss of ownership and control.

The government pointed out that the working paper does not necessarily represent policy nor an intention to commit itself to the pursuit of objectives. It is intended chiefly to provide a basis for discussion.

Orders & Installations

The University of Minnesota has ordered a Recoi Model 100 information storage and retrieval system from Dynamic Information Systems, Inc. to provide multioperator fast access to the university's central addrssing file.

Fairfax County (Va.) Public School System has ordered two HP-2000E systems, an HP-2000F systems and an HP-3000 system from Hewlett-Packard to implement a county-wide interactive time-sharing computer network.

Westinghouse Air Brake Co. has ordered a Univac 90/70 for manufacturing, inventory control and other applications at its data center.

Affiliated Bankshares of Colorado, Inc. has installed a VSC-8000 data collection and retrieval system, incorporating a voice response unit with data communications capabilities, from Applied Information Industries.

Kroger supermarket chain has ordered 337 Source 2100 field data entry terminals from MSI Data Corp.

Singer Simulation Products, a division of the Singer Co., has purchased three Systems 85 real-time systems from Systems Engineering Laboratories, Inc. The systems will be used in power plant training simulators Singer is providing the Tennessee Valley Authority (TVA).

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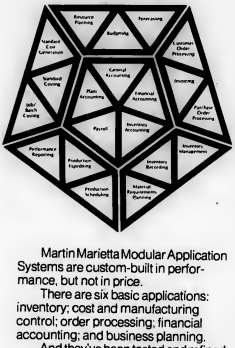

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Year-End Review and Forecast	Dec. 25/ Jan. 1	Dec. 6

Industry Heads Convene

Gold Futures Trading May Be Imminent

CW West Coast Bureau

EL SEGUNDO, Calif. – More than 100 representatives of computer and electronics firms met here recently to discuss the possibility of trading in gold futures.

An official of Xerox Corp., the seminar's host, said his firm is already considering trading in gold futures to protect itself from the fluctuations in the price of gold.

A.J. Gormley, group manager, procurement, said Xerox might consider a bilateral agreement with some of its suppliers to help share the margin cost of trading in gold futures.

The meeting was called to find a means of stabilizing the prices firms have to pay for components that contain gold.

Attendees at the seminar included Burroughs, GTE Sylvania, Huges Aircraft, Lockheed Electronics, TRW, Control Data, Compucorp, Electronic Memories & Magnetics, Memorex and Data Products.

It was estimated that firms represented at the meeting use $15 million worth of gold monthly.

The value of hedging on gold price movements were discussed by Dr. Henry G. Jarecki, an associate professor of psychiatry at Yale Medical School.

He used computers in his own diagnostic work and then for gold trading, subsequently becoming chairman of the board of Mocatta Metal Corp., one of the largest gold bullion dealers in the U.S.

The gold futures were described by Jarecki as a means of stablizing manufacturing costs and eliminating risks.

By swapping gold futures for spot gold, the futures contracts act as an insurance policy, offering protection against whiplashes that occur in the market, he said.

Futures also can be used in conjunction with scrap gold, protecting the price of the scrap while it is being reprocessed for use or sale, Jarecki said.

The crucial question, he continued is whether the U.S. Treasury will sell gold from its supplies to meet demands.

If they do not sell, the balance of payments of the U.S. could suffer badly and the price of gold go to $200 or $250 an ounce.

Gormley said Xerox will probably encourage suppliers to use gold futures as a way of stabilizing prices over a period of one year.

Xerox has a license to trade in gold futures, he said, and added "We're considering it."

Trading in copper futures, he said, is also a possibility because of the fluctuations in the price of the metal.

Expansions

Okidata Corp. has added 15,000 sq ft to its corporate headquarters in Moorestown, N.J., to meet increased production requirements for the firm's line of peripherals.

Kennedy Co. has leased a 30,000-sq-ft plant in Pasadena, Calif., for fabrication and assembly of its 9000 Series line of magnetic tape transports. This addition increases manufacturing space by 65%.

Signetics Corp. has opened a new 50,000-sq-ft plant in Noerdingen, Germany.

Control Date Corp. has opened a Cybernet center and branch office in Oakland, Calif.

Terminal Data Corp. has begun construction on a 74,000-sq-ft manufacturing and office facility in the Warner Business Park, Warner Center, Calif. The structure will consolidate four present locations in the San Fernando Valley.

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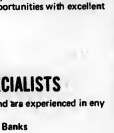

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With Second-Quarter Results

Inforex Figures Move Into Plus Column

BURLINGTON, Mass. – Inforex's second-quarter results occupy the earnings column in a marked change from the losses of the two preceding quarters.

Earnings totaled $30,000 or 1 cent a share compared with $905,000 or 33 cents a share in the year-ago period.

Revenues rose 29% above those of the same 1973 quarter, reaching $11.7 million compared with $9.1 million last year.

Revenues included $5.2 million from rental and service, compared with $3.9 million in the year-ago period.

Distributor sales and long-term leases more than offset the absence of third-party sales, the firm said. Compared with the second quarter of 1973, shipments to distributors have increased over 50%, noted Timothy C. Cronin, Inforex's chairman.

Distributors have purchased over 500 Inforex systems since 1970, he added.

For the six months, losses totaled $62,000 or 2 cents a share compared with earnings of $1.7 million or 63 cents a share last year.

Revenues for the half year rose to $22.5 million from $16.9 million in the 1973 period.

Cronin cautioned that "a relatively small shift in the sales/lease mix of systems can cause a disproportionate swing in net income in a particular period.

"Additionally, the anticipated gains in revenues later in the year will be offset somewhat by new product introduction expenses."

The slip in gross profits as a percentage of revenues from the year-ago quarter "largely reflects the inflationary pressures in labor and materials we have been experiencing . . ." Cronin said.

The effects of price hikes and other measures will not become significant until next year, he added.

AMS Takes Third-Quarter Loss

SUNNYVALE, Calif. – Third-quarter losses dragged down Advanced Memory Systems Inc.'s hefty six-month earnings of $244,800 to $30,200 or 2 cents a share for the nine months.

However, the loss of $214,600 or 17 cents a share in the quarter was considerably less than the year-ago loss of $1.1 million.

The $30,200 earnings in the nine months represents a turnaround from the loss of $250,500 or 20 cents a share in the 1973 period.

Revenues for both periods increased: to $8.41 million from $8.38 million in the 1973 quarter, and to $24.9 million from $23.2 million in the year-ago period for the nine months.

"Sales and profits during the quarter were affected by the transition in production from earlier add-on memory systems to new systems, specifically for the IBM Models 370/135 and 370/158, and the Processor Speed Up addition for the Model 155," explained President Orion L. Hoch.

"The cost of initiating their manufacture, and the fact that we are at the high end of the 'learning curve' on these new systems, hurt profits," he noted.

"In addition," Hoch said, "semiconductor component production costs, which represent a significant proportion of total memory system costs, did not decline as rapidly as they should."

Centronics Year-End Results Show Sharply Higher Earnings, Revenues

HUDSON, N.H. – As soon as Centronics Data Computer Corp. closed its books on 1974, in which it recorded sharply higher earnings and revenues, President Robert Howard forecast a 50% jump in earnings for next year.

Earnings for 1974 totaled $7.95 million or $1.65 a share compared with $4.9 million or $1.01 in 1973. Revenues rose 72% to $41.5 million from $24 million.

Fourth-quarter revenues reached $12.2 million compared with $8.2 million last year, while earnings rose to $2.3 million or 47 cents a share compared with $1.7 million or 36 cents a share.

Howard based his forecast for 1975 on a number of factors: anticipated benefits from expanded product lines, commitments and estimates of increased purchases by present customers, an expanding customer base and "a larger proportion of our production now going to major computer mainframe producers, who more precisely schedule their long-term requirements for our printer products," he said.

However, he noted, this growth might not be evident during the first quarter of 1975 because of a planned revamping of production facilities and methods.

Acquisitions

Datasaab Systems, Inc. has acquired the Systems Division of Facit-Addo, Inc. and will market Facit-Addo systems in the U.S.

Remote Computing Corp. has acquired Merlin Systems Corp. through an exchange of stock.

Management and Computer Services, Inc. has acquired the client accounts and programs of Educators Processing, Inc. Terms of the purchase were not disclosed.

University Computing Corp. (UCC) has acquired Heydrick Mapping Co. to broaden UCC's mapcoverage for the energy exploration and production industry.

Varian Associates has completed the acquisition of Communications Transistor Corp. (CTC) for $6.6 million in cash. The transaction modifies a 1969 agreement under which Varian provided funding for the start-up of CTC. The original agreement called for issuance of Varian stock in exchange for the remaining CTC shares.

Two Canadian firms, Corporation House Ltd. and Fisher and Wexler Ltd., have merged their consulting practices under the name of Corporation House Ltd.

TRW, Inc. has acquired Financial Data Science, Inc.

Boeing Computer Services, Inc. has acquired Androcor Industries, Inc., point-of-sale terminal service company. Terms of the acquisition were not revealed.

Itel Corp. has acquired Data Processing Bureau of California, Inc. for an undisclosed purchase price. Itel has also acquired Alpha Omega Computer Systems, Inc.

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Earnings Reports

SPERRY RAND
Three Months Ended June 30

	1974	1973
	(000)	(000)
Shr Erned	$.77	$.68
Revenue	709,684	a602,009
Earnings	26,639	23,502

a-Restated.

COMPUTAX SERVICES
Nine Months Ended June 30

	1974	1973
Shr Erned	$1.13	$1.07
Revenue	19,048,280	17,017,862
Earnings	1,429,450	1,351,500

COMPUTER SCIENCES
Three Months Ended June 28

	1974	1973
Shr Erned	$.06	$.01
Revenue	39,733,000	33,814,000
Earnings	585,000	181,000

GENISCO TECHNOLOGY
Nine Months Ended June 30

	1974	1973
Shr Erned	$.26	$.09
Revenue	7,932,430	6,401,778
Spec Cred	90,000	a(10,500)
Earnings	396,255	143,403

a-Consists of a loss from discontinued operations offset by a tax credit.

ELECTRONIC MEMORIES & MAGNETICS
Three Months Ended June 30

	1974	1973
Shr Erned	$.36	$.27
Revenue	31,282,000	26,901,000
aSpec Cred	945,000	804,000
Earnings	2,174,000	1,726,000
6 Mo Shr	.53	.54
Revenue	57,617,000	51,644,000
aSpec Cred	1,730,000	1,548,000
Earnings	3,910,000	3,426,000

a-Tax-loss carryforward.

TALLY
Three Months Ended June 30

	1974	a1973
Shr Erned	$.06	----
Revenue	4,300,495	$2,828,683
Spec Item	b41,000	d(111,261)
Earnings	161,561	(341,283)
6 Mo Shr	.11	----
Revenue	8,454,229	5,927,345
Spec Item	b73,000	d(111,261)
Earnings	286,737	(753,294)

a-Restated. b-Tax credit. d-Loss from disposition of EDP Division in May 1973.

HONEYWELL
Three Months Ended June 30

	1974 (000)	1973 (000)
Shr Erned	$1.13	$1.10
Revenue	654,526	577,204
Tax Cred	717	1,279
Earnings	21,604	20,832
6 Mo Shr	2.14	1.99
Revenue	1,239,557	1,098,132
Tax Cred	1,833	2,061
Earnings	40,997	37,737

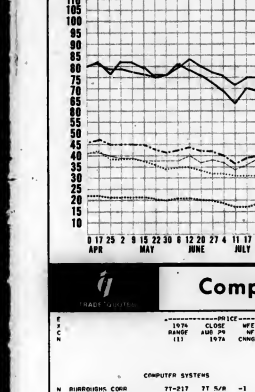
CENTRONICS DATA COMPUTER
Year Ended June 30

	1974	1973
Shr Erned	$1.65	$1.01
Revenue	41,550,000	24,300,000
Earnings	7,950,000	4,880,000
3 Mo Shr	.47	.36
Revenue	12,150,000	8,200,000
Earnings	2,275,000	1,730,000

SINGER
Three Months Ended June 30

	1974 (000)	1973 (000)
aShr Erned	$.80	$1.15
Revenue	673,760	615,745
Earnings	18,138	21,469
a6 Mo Shr	1.68	2.26
Revenue	1,334,909	1,196,331
Earnings	31,815	42,415

a-Fully diluted.



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Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE*QUOTES, INC. Cambridge, Mass. 02139

F		1974	PRICE	CHGE	WEEK	WEEK
C		RANGE	AUG 2W	NET	PCT	PCT
C		(1)	1974	CHNGE	CHNGE	CHNGE
	COMPUTER SYSTEMS					
N	BURROUGHS CORP	77-217	77 5/8	-1	-1.2	
O	COMPUTER AUTOMATION	9- 14	9 3/4	-1/4	-2.5	
N	CONTROL DATA CORP	18- 38	11 7/8	-2	-10.0	
O	DATA GENERAL CORP	30- 58	34	-3 3/4	-10.9	
O	DATAPOINT CORP	9- 15	8 3/4	-1 1/4	-2.7	
O	DIGITAL COMP CONTROL	2- 4	3 1/4	-1/4	-7.1	
N	DIGITAL EQUIPMENT	77-121	79 1/2	5/8	+0.7	
O	ELECTRONIC ASSOC.	2- 3	2	-1/4	-14.2	
A	ELECTRONIC EMSINFR.	4- 11	5 3/8	-1 1/4	-18.8	
N	FINCOMP	22- 48	22 1/2	-1 1/2	-6.3	
O	GENERAL AUTOMATION	24- 48	24 1/4	+1 1/2	+6.6	
O	GRI COMPUTER CORP	1- 2	1 1/2	-1/4	-14.2	
N	HEWLETT-PACKARD CO	64- 98	69	-1 3/8	-1.9	
N	HONEYWELL INC	34- 84	34	-3 1/2	-9.3	
N	IBM	189-251	188 3/4	+4	+2.8	
O	INFORMATICS INC	8- 29	29	0	0.0	
O	MICRODATA CORP	4- 9	3 3/8	-1/4	-6.8	
N	NCR	24- 44	25 1/8	-2 5/8	-9.4	
N	RAYTHEON CO	27- 39	27 5/8	-1 1/2	-5.1	
N	SINGER CO	21- 45	21 1/8	-1 1/2	-14.2	
N	SPERRY RAND	28- 44	28 1/8	-1/8	-3.7	
A	SYSTEMS ENG. LABS	1- 3	1 3/4	-1/8	-6.6	
N	TEXAS INSTRUMENTS	76-115	77	+4 1/8	+5.6	
O	ULTIMACC SYSTEMS INC	1- 1	1	0	0.0	
O	VARIAN ASSOCIATES	7- 13	7	-3/4	-9.6	
O	WANG LABS.	10- 25	10	-1 1/2	-13.0	
N	XEROX CORP	77-127	81 1/2	+3 1/4	+4.1	
	LEASING COMPANIES					
O	BRESNAHAN COMP.	2- 2	2 1/4	0	0.0	
N	COMDISCO INC	2- 7	1 5/8	0	0.0	
A	COMMERCIAL GROUP CORP	1- 2	1 1/4	-1/4	-9.0	
O	COMPUTER EXCHANGE	1- 1	1/8	0	0.0	
A	COMPUTER INVSTRS GRP	1- 1				
O	COMP. INSTALLATIONS	1- 1	1/4	0	0.0	
A	DATRONIC RENTAL	1- 1	1/4	0	0.0	
A	DCI INC	2- 1	3/8	0	0.0	
A	DPF INC	1- 1	2 1/2	-1/4	-9.0	
O	EON RESOURCES	2- 3	3 1/4	0	0.0	
O	GENSTATE NDT	1- 3	1 3/4	-1/4	-8.7	
A	GREYHOUND COMPUTER	3- 6	2 7/8	-1/8	-4.1	
A	ITEL	4- 8	4 1/2	-1/8	-2.7	
N	LFASCO CORP	4- 12	8 3/4	+1/8	+1.4	
O	LFASPAC CORP	1- 2	1/4	0	0.0	
O	LFCTRO NST INC	1- 1	1/8	0	0.0	
A	NBO INC	2- 4	2	-1/8	-5.8	
A	PIONEER TEX CORP	2- 10	2 1/8	-1/4	-10.5	
A	ROCKWOOD COMPUTR	1- 1	1/4	0	0.0	
N	U.S. LEASING	8- 24	6 1/4	-1 5/8	-20.8	

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X		RANGE	AUG 2W	NET	PCT	PCT
C		(1)	1974	CHNGE	CHNGE	CHNGE
	SOFTWARE & EDP SERVICES					
O	ADVANCED COMP TECH	2- 7	3	0	0.0	
A	AMRLSFO DATA SRS.	2- 3	1 5/8	-1/8	-7.1	
A	APPLIED (DIO)	2- 3	2 1/8	0	0.0	
N	AUTOMATIC DATA PROC	21- 57	21 3/4	-1/4	-1.1	
O	BRANDON APPLSYS SYST	1- 3	1 1/4	-1/8	+20.3	
O	CENTRAL DATA SYSTEMS	4- 6	4 1/4	0	0.0	
O	COMPUTER DIMENSIONS	2- 3	1 1/2	0	0.0	
O	COMPUTER HORIZONS	1- 5	1 1/4	0	0.0	
O	COMPUTER NETWORK	1- 2	1 1/4	0	0.0	
O	COMPUTER SCIENCES	9- 4	2 1/8	-3/8	-15.0	
O	COMPUTER TASK GROUP	1- 3	1	-1/4	-20.0	
O	COMPUTER TECHNOLOGY	1- 1	1/2	0	0.0	
O	COMPUTER USAIF	2- 3	2 1/4	-1/2	+14.2	
O	COMRESS	1- 1	3/8	0	0.0	
O	COMSHARE	2- 4	2	1/2	+20.0	
N	COMPUTA CORP	2- 4	2	1/8	-5.8	
A	DATATAB	1- 2	1 1/2	1/8	+9.0	
A	ELECT COMP PROG	1- 1	1/8	0	0.0	
A	ELECTRONIC DATA SYS.	2- 5	14 1/4	0	0.0	
O	INFORMATIONAL INC	1- 2	1	0	0.0	
O	I.D.A. DATA CORP	1- 1	1/4	-1/8	-33.3	
A	INFORMATION MARKET.	1- 1	3/4	0	0.0	
N	KFANE ASSOCIATES	2- 4	1 3/4	0	0.0	
A	MYDATA CORP	1- 6	3 1/2	3/8	+21.4	
A	LOGICON	2- 5	3 1/8	-1/8	-3.8	
O	MANAGEMENT DATA	1- 2	1 1/4	-1/8	-9.0	
O	NATIONAL CSS INC	10- 37	14	+2 1/2	+21.7	
O	NATIONAL COMPUTR CH	1- 1	1/4	0	0.0	
A	NW LINC SYSTMS INC	21- 30	20 1/2	-2 1/2	-10.8	
O	PANSOPHIC SYSTEMS	1- 2	1 1/4	-1/4	-16.6	
O	RAMBUSH RESEARCH	1- 1	1/2	-1/8	-20.0	
N	RAPIDATA INC	1- 1	1/2	1/8	+30.3	
O	REVENUE SYSTEMS	2- 3	3/4	-1/8	-14.2	
O	SANBLICITY COMPUTER	1- 1	1/2	-1/4	-33.3	
O	SCI SYSTEMS	1- 2	1 1/2	0	0.0	
O	SYNSHARE INC	7- 12	7 7/8	-3/8	-4.5	
O	TELEVIDEO COMPUTER	2- 4	2 1/4	-1/4	-9.0	
A	UMS SYSTEMS	2- 4	1 7/8	0	0.0	
N	WELP CORP	2- 4	2	0	0.0	
	PERIPHERALS & SUBSYSTEMS					
N	ANDREXBORAPH-MULT	4- 11	4 5/8	-5/8	-11.9	
O	ADVANCED MEMORY SYS	2- 7	3 3/4	-1/8	-4.8	
O	AMPEX CORP	3- 7	3 7/8	-1/2	-12.0	
O	ANDERSON JACOBSON	2- 4	2 1/4	0	0.0	
O	APENINE MEDICAL ELEC	2- 4	1 3/4	-1/4	-12.5	
N	ARLT-MECHANER & NFW	2- 4	2 3/4	-1/2	-15.3	
A	BUNKERRAMO	3- 6	3 1/2	-1/2	-7.5	
A	CALCOMP	2- 5	2	-1/4	-11.1	
O	CAMBRIDGE MEMORIES	7- 18	7 1/8	-3/8	-5.0	
O	CENTRONICS DATA COMP	12- 23	12 1/4	-3/4	-5.8	
O	CODEX CORP	8- 15	10	-1 1/2	-13.0	
O	COMPUTRONICS	1- 2	5/8	-1/8	-16.6	
O	COMPUTER COMMUN.	1- 2	3/4	-1 1/4	-25.0	
A	COMPUTER EQUIPMENT	2- 3	1 1/4	-1/4	-9.0	
O	COMPUTER MACHINERY	2- 5	2 1/2	-1 1/2	-16.6	
O	COMPUTER TRANSCRIPTR	2- 3	2 7/8	-1/8	-16.6	
N	COMRAC CORP	12- 23	12 1/8	-5/8	-4.9	
O	DATA ACCESS SYSTEMS	2- 3	2 1/2	0	0.0	
O	DATA 100	7- 13	9	-3/8	-4.0	
O	DATA COMPUTER CORP	2- 4	3 1/4	-1/4	-7.1	
O	DATA RECOGNITION	1- 1	1/4	0	0.0	
O	DATA TECHNOLOGY	1- 2	1 1/4	1/8	+11.1	
O	DECISION DATA COMPUT	4- 13	5 3/8	-1 1/4	-14.8	
O	DELTA DATA SYSTS	2- 7	2 1/4	-1/4	-9.0	
O	DIZAN CONTROLS	1- 2	1	0	0.0	
O	ELECTRONIC M & M	1- 2	1 1/4	-1/4	-16.6	
O	FABRI-TEK	2- 4	2 1/4	-1/4	-10.3	
N	GENERAL COMPUTER SYS	2- 4	3/4	0	0.0	
N	GRAPHIC SCIENCE	35- 54	36 1/2	-1 1/2	-4.0	
O	HASELTINE CORP	4- 7	3 1/2	-1/4	-6.6	
O	INFORMEX	1- 2	1	0	0.0	
O	INFORMATION DISPLAYS	1- 1	1/8	-1/4	-66.6	
O	INFORMATION INTL INC	8- 14	8 1/4	-1 1/4	-12.9	
A	LINDY ELECTRONICS	3- 3	3 1/4	0	0.0	
O	MANAGEMENT ASSIST	1- 1	1/8	0	0.0	
O	MFMORY	1- 2	1 1/4	0	0.0	
A	MILGO ELECTRONICS	8- 19	8 1/8	-1	-10.9	
N	NYMARK INDUSTRIES	7- 14	8 1/8	-1/8	-7.1	
O	OGFC COMPUTER SYST.	2- 3	1 1/2	0	0.0	
O	OPTICAL SCANNING	2- 4	2 1/4	0	0.0	
O	PERTEC CORP	2- 4	2 3/8	0	0.0	
O	POTTER INSTRUMENT	2- 4	1 7/8	0	0.0	
N	PRECISION INST.	1- 3	3/4	0	0.0	
O	RECOGNITION EQUIP	2- 4	2 1/8	0	0.0	
O	RFCOGNITION EQUIP	2- 4	2 1/8	0	0.0	
N	SANDERS ASSOCIATES	8- 17	9	-1 3/8	-12.0	
O	SCAN DATA	1- 2	1	-1/8	-11.1	
A	STEWART TECHNOLOGY	1- 2	1 1/4	-1/4	-16.6	
O	SYCOR INC	4- 13	5	-1/2	-7.6	
O	TALLY CORP.	4- 7	2 1/8	-1/4	-10.5	
O	TFF INC	4- 7	2 3/4	-1/4	-8.3	
N	TFKTRONIX INC	24- 48	24 3/8	-1 1/4	-4.9	
O	TRIAD INC	3- 7	5 1/4	-1/4	-4.7	
A	WANDCO INC	4- 13	6 1/4	-3/8	-5.6	
O	WILTEK INC	5- 8	3	-1/2	-14.2	
	SUPPLIES & ACCESSORIES					
O	BALTIMORE BUS FORMS	4- 4	5	0	0.0	
O	BARRY WRIGHT	1- 2	1	-1/2	-11.1	
O	CYBERNETICS INC	1- 2	1	0	0.0	
O	DATA PRODUCTS CORP	24- 54	38 1/4	-3/8	-0.9	
O	DIPPLES PRODUCTS INC	4- 17	15 1/2	+1/8	+1.6	
N	EMMIS PUBL FORMS	5- 7	5 1/4	-1/4	-4.7	
O	GRAHAM MAGNETICS	4- 11	4 1/4	-1	-12.7	
O	GRAPHIC CONTROLS	7- 11	8 1/4	-1/4	-2.9	
O	3M COMPANY	68- 79	68 1/4	-1 1/2	-2.1	
O	MOHAWK DATA LTD	12- 19	12	-1/2	-3.9	
O	MOORE CORP	40- 51	48 1/4	-1 1/2	-3.0	
O	REYNOLDS & REYNOLD	8- 15	9 1/2	-1/2	-5.0	
O	STANDARD REGISTER	11- 18	13 1/4	-1/4	-18.8	
O	TAB PRODUCTS CO	5- 11	5 1/4	1/2	+8.8	
A	UARCO	14- 23	19 1/2	-1	-4.8	
A	WARSAW MAGNETICS	4- 7	4 1/4	-1/4	-5.6	
N	WALLACE BUS FORMS	14- 24	18	-3/8	-2.0	

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